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The World of Cross-Listings and Cross-Listings of the World: Challenging Conventional Wisdom

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Executive Summary

For years, there has prevailed a conventional wisdom rationalizing why firms pursue overseas listings. It argues that firms seek such opportunities to benefit from a lower cost of capital that arises because their shares become more accessible to global investors whose access would otherwise be restricted because of international investment barriers. Recently, much evidence has been assembled that challenges this conventional wisdom and, as a result, a number of new research initiatives have been proposed to understand better the motivation for overseas listings. They factor into the listing decision many more complex risks that globalization can create at the firm level, such as various agency conflicts, transparency and disclosure concerns, and other corporate governance problems. The goal of this article is to survey, synthesize and critically review this most recent literature and to identify yet unresolved questions to answer.

Outline

1. Introduction

During the past two decades, the pace of globalization in capital markets has accelerated and broadened in scope to make easier ownership and trading in securities from around the world. Consider that total cross-border portfolio flows of capital between residents of the U.S. and all other countries represented less than one percent of U.S. Gross Domestic Product (GDP) in 1980, according to the U.S. Treasury; today, they comprise almost 30 percent and total $3.5 trillion (see Figure 1). Equities have been an important component of this rapid expansion of cross-border capital flows. As a result, tremendous competition has arisen among major stock exchanges around the world to attract listings and trading volume and to stoke capital-raising activity by overseas companies in their markets. Companies have responded in kind. During the 1990s, the number of foreign companies with shares cross-listed and trading on major exchanges outside of their home markets reached as high as 4,700 and included among their numbers not only companies from developed economies, but also many from emerging economies opening up their stock markets to foreign investors for the first time.

During the 1990s, there was a concomitant growth in the number of theoretical and empirical studies in the economics, finance, strategy and accounting fields seeking to understand the net benefits of the corporate decision to list shares on overseas exchanges. These studies emphasized the importance of the benefits of a lower cost of capital, an expanded global shareholder base, greater liquidity in the trading of shares, prestige, and publicity over the costs of having to reconcile financial statements with home and foreign standards, direct listing costs, exposure to legal liabilities, taxes and various trading frictions.

Yet, the past several years have witnessed a significant slowdown in the pace of new international cross-listings and in the fraction of global trading on overseas exchanges. Consider that, as of the end of 2002, the number of internationally cross-listed stocks had retreated to 2,300 from its 1997 high of 4,700, a decline of over 50%. Concomitantly, there have been dozens of new academic studies of the benefits and costs of listings that depart from the conventional wisdom of previous studies and that seek to rationalize the changing and now more complex world of cross-listings. These studies acknowledge the opportunities that the globalization of equity issuance and trading affords, but they also explore new risk

factors due to globalization that relate to agency conflicts among controlling shareholders, management and public investors, information-asymmetry problems among market agents, complexities of multi-market trading for liquidity, price discovery and arbitrage, and a host of other transparency and corporate governance issues.

The goal of this article is to survey and synthesize the key elements of these recent research initiatives. The point of departure is an outline of the conventional wisdom in Section 2. For this purpose, I will focus primarily on the main learning points of my 1998 monograph (Karolyi, 1998), entitled Why Do Companies List Shares Abroad? A Survey of the Evidence and Its Managerial Implications. In Section 3, I describe some of the new market trends on international cross-listings around the world. Next, in Section 4, I delineate the inherent limitations with the conventional wisdom and outline key contributions to the new research initiatives of the past eight years. There are a few common themes among these newer studies, including a greater focus on corporate governance problems, on the growing role of information "intermediaries" (e.g. analysts, media) and information asymmetries, and on the importance of the underlying liquidity in the trading of shares in a multi-market environment. But the chief motivation of all these efforts is a general dissatisfaction with existing explanations that rely simply on hypotheses about the segmentation of international capital markets. Finally, Section 5 discusses the questions that are still waiting for an answer in this research area.

2. A Review of the Conventional Wisdom

In Karolyi (1998), I surveyed sixty-nine contributions on the economic implications of the corporate decision to list shares on an overseas stock exchange. My focus was on the valuation and liquidity effects of the listing decision and on the impact of listing on the company's global risk exposure and its cost of equity capital. I provided an overview of the listing process, a description of the institutional features of the process of cross-listing (relying heavily on information from the depositary banks about creating American Depositary Receipt, or ADR, programs), and associated regulatory reporting and disclosure requirements. I delineated the differences among Level 2 and 3 ADRs traded on

the New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and Nasdaq, which require full reconciliation U.S. Generally Accepted Accounting Principles (GAAP), Level 1 ADRs trading on the over-the-counter markets, which require minimal reporting, and Securities and Exchange Commission (SEC) Rule 144a ADRs, or private placements, which are sold to, and traded among, only qualified institutional buyers with no reporting requirements.[2] Finally, several case studies of cross-listings were highlighted in Compania Telefonos de Chile, China's Huaneng Power International, and Germany's Deutsche Telekom.

An bias in this early survey arose from its almost exclusive focus on the phenomenon through the mid-1990s, which saw rapid growth in the number of non-U.S. companies pursuing listings in the U.S. markets. This bias revealed itself in the literature survey also. Indeed, only 15 of the sixty-nine contributions focused on U.S. companies listing abroad and, of the 3 studies which considered other global cross-listings, all were published in the late 1980s or early 1990s.[3] (This specialized focus was to represent an important opportunity for one of major new research initiatives I identify later in Section 4.)

A. Share Price Reactions to Cross-Listing Decisions

The majority of the empirical studies on international listings addressed the share price reactions around a firm's listing decision. Some of these event studies employed monthly returns using a two-year event window, while others studied daily returns using a more conventional two-month window. While some focused on listing dates, others evaluated on exchange-application, application-acceptance or regulatory-approval announcement dates. The results were carefully separated into those for U.S. firms listing in London, Tokyo, Toronto and other major overseas exchanges and those for non-U.S. firms listing on U.S exchanges. Studies in the former category by Lee (1991), Torabzadeh, Bertin and Zivney

[2] Specifically, Rule 144a issues are exempted (Rule 12g-3-2b) and only required to provide an English language translation of home-market financials upon request. Level 2 and 3 issues are required to register a Form F-6 and the companies file a Form 20-F (detailing registrant's business and contains audited financials) annually. Level 3 issues involve raising capital and require (under the 1933 Companies Securities Act as a non-US company making a first public offering in the US) incrementally registration of the deposited shares via Form F-1. This reports the use of proceeds, names of underwriters, the amount underwritten by each, the fees and terms of the offering.

[3] This bias is not unique to my early survey, as similar discussion can be found in the sections of the survey studies by McConnell, Dybevik, Haushalter and Lie (1995) and Baker and Meeks (1991) devoted to international listings.

(1992), Varela and Lee (1993a, 1993b), and Lau, Diltz and Apilado (1994) all found either slightly positive or neutral market reactions in the listing month. The latter category included Switzer's original (1986) study of Canadian firms only, Alexander, Eun and Janakiramanan (1988), Foerster and Karolyi (1993), Jayaraman, Shastri and Tandon (1993), Viswanathan (1996), and Ko, Lee and Yun (1997).

However, the most comprehensive studies featured were those of Miller (1999) and Foerster and Karolyi (1999), which were both working papers at the time of the monograph. Miller's event study found a positive 1.15 percent average abnormal return for 183 ADR-initiating announcement dates between 1985 and 1995. His study concentrated on the 80 days around the event and included Level 1 OTC listings, SEC Rule 144a private placements, as well as Level 2 and 3 exchange listings on the NYSE, AMEX and Nasdaq stock exchanges. Two important auxiliary findings in Miller's study were that significantly higher announcement-day price reactions were obtained for emerging market firms (1.54 percent) and that these reactions were higher for exchange listings (2.63 percent). He interpreted this evidence as being consistent with the prevailing wisdom that the net benefits to cross-listing firms stem from their decision to overcome investment barriers.

Foerster and Karolyi's study employed weekly abnormal returns for the two years around the listing dates for 183 ordinary and ADR listings. While they found a significant listing week return of 1 percent on average, they also uncovered an interesting pre-listing run-up of abnormal returns of 10 percent and an average post-listing decline of 9 percent. Surprisingly, they found that these longer-run share price reactions around listings were as dramatic for developed-market as for emerging-market firms, and that listings associated with capital-raising (known as Level 3 ADRs) were associated with lower post-listing share-price declines. They proposed that prevailing explanations based on investment barriers and segmented markets were inadequate and offered several other possible explanations for these anomalous results with additional cross-sectional analysis of the cumulative abnormal returns. Ultimately, they related it to strategic market-timing decisions by the management and to other theories about diminished market incompleteness (Merton, 1987) as the firm's shares become more widely known following the cross-listing.

B. Changing Market Risk Exposures and the Cost of Capital

The theoretical developments inspired by the early and subsequent event-studies rationalized that cross-border listings of stocks are positively viewed by investors because the action taken by management circumvents many of the regulatory restrictions, costs and information problems that represent barriers to cross-border equity investing. Important papers by Stapleton and Subrahmanyam (1977) and, more importantly, Alexander, Eun and Janakiramanan (1987), Eun and Janakiramanan (1986) and Errunza and Losq (1985) showed how the cross-listing of shares across two markets that would be otherwise segmented by such barriers would lead to a higher equilibrium market price and a lower expected return. The revaluation arises from the elimination of a "super" risk premium (Errunza and Losq's term) that represents compensation to local investors for their inability to diversify their risks globally.

An important implication of these models is that shares of a cross-listing firm may experience significant changes in its local and global market risk exposures and its cost of capital. Numerous empirical studies followed and were carefully separated into those that studied U.S. firms listing abroad and non-U.S. firms listing in the U.S. Once again, the results were distinctly different. Typically, these studies evaluated changes in total risk (ex post standard deviations of returns or ex ante implied volatilities from options) or systematic market risks (with different returns-generating models) in event-time around the listing date. For U.S. firms listing abroad (Howe and Madura, 1990; Varela and Lee, 1993b; Howe, Madura and Tucker, 1994; and Lau, Diltz and Apilado, 1994), stock return volatilities changed very little and home market betas actually rose slightly. Fewer studies had examined changes in risks for non-U.S. firms listing in the U.S. (Foerster and Karolyi, 1993, 1999; Jayaraman, Shastri and Tandon, 1993), but those studies had either uncovered a significant decrease in local-market betas with no change in global-market or U.S.-market betas or a significant increase in the latter with no change in the former.

These results for non-U.S. companies were interpreted as consistent with a lower cost of capital after cross-listing given the typically-higher market risk premiums that arise in local markets relative to global markets and given the positive revaluations observed around listings. In the monograph, while

acknowledging appropriate caveats on the difficulties of applying equilibrium models of returns, I offered estimates of the decline in cost of capital ranging from around 33 basis points for non-U.K. European companies to 207 basis points for Asian companies.[4]

C. Liquidity, Multi-Market Trading, Price Discovery and Arbitrage

Surveys of corporate managers that have initiated overseas listings for their firms (Mittoo, 1992b, Fanto and Karmel, 1997) often cite increased liquidity as a primary motivation.[5] The third component of the 1998 monograph surveyed studies of changes in liquidity for firms around cross-listings and those that associated the changes in liquidity with the positive revaluations. The evidence generally confirmed the hypothesis. Early studies by Tinic and West (1974) of lower bid-ask spreads for 112 Canadian stocks cross-listed on U.S. exchanges than their purely domestically-traded counterparts was followed by several empirical studies including a few using intraday transactions data.

The important contributions were inspired by theoretical models of Kyle (1985), Admati and Pfleiderer (1988) and, specifically in the context of multi-market trading, Chowdhry and Nanda (1991). These theories consider the interaction among private information-based traders, market-makers, and information-less liquidity traders. In the original studies, information-based traders seek to camouflage their information by timing their trading when the markets are "thick" with other liquidity traders; in Chowdhry and Nanda, they are similarly motivated, but are strategic in selecting their trading location in the "thickest" of the competing markets. These theories offer predictions about clustering of trading volume around market opens and closes, about clustering of trading volumes in some markets and not

[4] A follow-up study by Errunza and Miller (2000) and a recent working paper by Hail and Leuz (2005) suggest that these early, rough estimates are actually quite reasonable. Errunza and Miller examine post-listing returns for 126 firms which cross-listed in the U.S. from 32 countries and uncover a 42 percent decline in the cost of capital, which, they assert, is driven by the ability of U.S. investors to span the foreign security prior to cross-listing. Hail and Leuz employ a different methodology in which cost-of-capital estimates are imputed from four different residual-income or discounted-dividend valuation models by calibrating current prices and analysts' forecasts of future earnings growth. The reductions in cost of capital estimates after a US cross-listing on over-the-counter markets or major exchanges are statistically significant and range from 22 basis points to 129 basis points.

[5] Bancel and Mittoo (2001) find that the importance of liquidity is still a critical factor. Their newest survey of 79 European managers measures the perceived net benefits of foreign stock listings on both U.S. and foreign exchanges and shows that it is significantly correlated with total trading volume after foreign listing.

others, and about the price impact of these trades by examining volume-volatility relationships in these special circumstances.

These predictions are borne out in the data on cross-listings, but again primarily for non-U.S. firms listing on U.S. exchanges. A number of the studies examine patterns in bid-ask spreads, price volatility and trading volumes in ADRs after they have cross-listed on U.S. markets (Forster and George, 1995; Chan, Fong, Kho and Stulz, 1996; Werner and Kleidon, 1996). Werner and Kleidon uncover unusually high volatility and trading volume at the open for Japanese ADRs (after Tokyo has closed) and around 11a.m. for U.K. ADRs (when London closes).

Several studies consider the liquidity impact of the listing decision itself. Noronha, Sarin and Saudagaran (1996) show that no measurable difference in daily weighted-average spreads exists for U.S. firms after listing in London or Tokyo; Foerster and Karolyi (1998) provide evidence of a 29 percent increase in intraday volume and a 44 basis point decline in intraday effective spreads for 52 Canadian companies listing in the U.S. Domowitz, Glen and Madhavan (1998) examined weekly returns, volatility and volumes of 25 Mexican stocks cross-listing on U.S. markets and offer a more complex interpretation that is related to the degree of transparency between the markets competing for order flow. They show that higher volume and lower market impact costs arise for those firms with no foreign ownership restrictions. For a sample of 128 NYSE-listed non-U.S. stocks, Smith and Sofianos (1996) measured an increase in the combined value of trading from $240 million per stock per day to $340 million, a 34 percent increase.

The final section of the monograph evaluated the arbitrage and efficiency of the ADR market. Since these receipts also represent claims on cash flows generated by the underlying stock, though denominated in U.S. dollars, one might expect that, because of arbitrage, ADR prices should be aligned with their underlying currency-adjusted equivalent in the home market. Five empirical studies support this prediction, but each of them is small in scale, scope and quality of data (Rosenthal, 1983; Kato, Linn and Schallheim, 1991; Wahab, Lashgari and Cohn, 1992; Park and Tavakkol, 1994; and Miller and Morey, 1996).

3. New and Old Trends

The pace of international cross-listings around the world has decelerated dramatically during the last few years. This structural break is, of course, coincident with a combination of global macroeconomic, political, regulatory and institutional factors, so it would be difficult to attribute this outcome to any one of them. My aim in this section is to provide a snapshot of the market today and to reassess the perspectives of long-term developments in these markets.

Cross-border capital flows comprised of gross purchases of U.S. and foreign securities by U.S. residents from foreign residents and gross sales by U.S. residents to foreign residents have grown exponentially since the late 1970s. According to U.S. Treasury International Capital (TIC) data (Figure 1), the sum of gross purchases and sales now totals over $3.5 trillion, which represents about one-third of the U.S. GDP; by contrast, these gross flows hovered around less than 1 percent of GDP in the 1970s and did not even reach 10 percent until the mid 1990s. Two other features of these data are salient. First, transactions in U.S. and foreign equities have grown to become a significant fraction of these gross flows rising to almost 20 percent by 1999 while averaging no higher than 10 percent through the mid 1990s. Interestingly, the equities component has retreated back to the 10 percent level over 2000-2003. Second, gross sales by U.S. residents to foreigners have increased rapidly since the late 1990s, no doubt in part related to extraordinary events like the Asian crisis of 1997.

Figure 2 highlights this latter feature by focusing exclusively on transactions in foreign equities and by cumulating net purchases of U.S. residents (gross purchases less gross sales) over the 28 year horizon. The cumulative net purchases remain well below $50 billion through the 1980s and do not begin to accelerate until July 1997 where, upon reaching the $350 billion plateau, it grows slowly until today where it hovers about $625 billion. It is worth noting that U.S. holdings of foreign equities is $2.08 trillion in 2003, or approximately 12 percent of the U.S. investors asset base, according to Treasury International's 2003 Report on U.S. Portfolio Holdings of Foreign Securities. The $1.5 trillion difference in implied U.S. holdings of foreign equities stems primarily from valuation changes, but also the fact that

the TIC data does not account for ADR transactions among U.S. residents while the Federal Reserve data explicitly includes it (Edison and Warnock, 2003) in part because of the availability of proprietary survey data from U.S. custodians and U.S. institutional investor. This is an important testimonial to the presence of ADRs and international cross-listings among U.S. investors.[6]

Figure 3 presents the growth of the number of non-U.S. firms listing in the U.S. The number of foreign listings exceeds 2000 as of the end of 2003, more than double that in 1990. Of course, these listings come in several varieties and each shows different rates of growth. Level 2 and 3 exchange listings on the NYSE and Nasdaq have grown almost three-fold in number since 1990 from just under 200 listings to over 500 listings in 2003. The number of Level 1 OTC listings has diminished over this period to just over 400 in number, while the number of SEC Rule 144a private placements, a program that was initiated in April 1990, has grown to over 450 in number. Ordinary shares in the form of direct listings (primarily by Canadian companies), New York Registered ("Guilder") shares or global registered shares (GRS) are the remaining category and they account for around 550 listings by the end of 2003. The most interesting feature of the trend is that the steady growth rate observed from 1990 to 2001 has retreated with a net 150 de-listings over 2002-2004.[7]

The composition of U.S. cross-listings by home country has also changed over the last decade. These data are obtained from Citibank's Universal Issuance Guide and are presented in Figure 4. I compile the information as of 1990 and 2003 to highlight the contrast. Since these data include only ADRs, the large number of ordinary listings by Canadian companies is excluded (375 listings in 2003). After the Canadian contingent, companies from the U.K., Australia, South Africa and Japan dominate the U.S. markets. It is clear, however, that their overall importance in numbers has diminished: together, in

[6] Depositary banks have increased their research on how different segments (retail versus institutional, hedge funds versus managed accounts) of the U.S. investment community participate in foreign equities. Useful reports include JP Morgan's Wrap Accounts: Factors in Driving ADR Investment (June 2004), Bank of New York's The U.S. Investment Community's Appetite for Foreign Equities: 2004 and Citibank's regular quarterly report on U.S. Investors Level of Investment Abroad.

[7] It is important to recognize that voluntary delistings are likely to be few in number. The more important point is that new listings are not keeping up with the normal pace of de-listings due to mergers or involuntary de-listings due to distress or failures to meet continued exchange-listing requirements. I thank Frank Warnock for helping to preclude any confusion.

1990, they comprised 78 percent of all listings, but in 2003, this fraction has declined to 39 percent. The number of participating countries has increased from 30 to 83 and increasing numbers of the participating countries are from emerging economies that have undergone significant market liberalizations in the intervening period. The most prominent among these countries include Mexico (5 percent of listings in 2003), Brazil (4 percent), India (3 percent), Russia (3 percent), Korea (3 percent) and Taiwan (2 percent).

Figure 5 presents data on trading activity among the prominent Level 2 and 3 exchange-listed ADR programs and Figure 6 shows the capital raising activity among (Level 3) public and private (SEC Rule 144a) programs. The annual dollar volume of trading in ADRs increased from $200 billion to almost $1.2 trillion in 2000, but the decline in market valuations caused the activity to halve to around $600 billion during 2001-2003. But, not all of this can be attributed to valuations, as the growth of share trading volume in terms of billions of shares traded also slowed after 2000. Today, 37 billion ADR shares trade annually, almost 20 times the activity in 1990. Capital raising activity has ebbed and flowed over much of the 1990s, with a steady rate of growth to the peak of $30 billion in 2000. Since 2001, less than $10 billion has been raised in each year.

A major limitation of our presentation is the exclusive focus on the U.S. markets as the host country for international cross-listings. This represents less of a choice than a necessity due to lack of available data. Nevertheless, some information is available on foreign companies listing on stock exchanges around the world from the Fédération International des Bourses de Valeurs (FIBV, World Federation of Stock Exchanges, www.fibv.com). In Tables 1 and 2, I compile data on the number of foreign and domestic listings and the dollar value of trading, respectively, for about 30 exchanges for three years (1995, 1999 and 2004). One must be cautious in interpreting these data because of important differences in reporting of these data to the FIBV due to dealer versus auction markets, common versus preferred share listings, and other features. I contrast these data with those I originally compiled in the 1998 monograph (Table II.2) for twelve of the major stock exchanges around the world. There, I noted huge growth in the number of foreign listings on the NYSE (59 to 247) and Nasdaq (244 to 362) relative

to that of other markets, but especially relative to London which maintained the largest number (531) of foreign listings but without any obvious growth.

Table 1 indicates that the pace has, in fact, slowed since 1995. Across all stock exchanges, the total number of foreign firm listings on major exchanges (including double-counting for firms cross-listed on multiple foreign exchanges) was 3,508 in 1995; at the end of 2004, the number had declined by half to 2,335. The median percentage of foreign-to-total listings across the exchanges was 14.6% in 1995 and it has declined to 9.6% by 2004. The stock exchanges with the highest number of foreign listings today are the NYSE (459), London (351) and Nasdaq (340), although, as a fraction of their own total listings, Euronext (25.1 percent), the Swiss Exchange (31 percent) and Mexico (53 percent) lead the way. Also, it is very clear that London has experienced the largest decline in absolute number of foreign listings and as a percentage of total listings between 1995 and 2004.

The total value of trading across markets reached its peak in 1999 and since then it has remained steady across almost all stock exchanges of the world through 2004 (Table 2). The fraction of total trading comprised by the foreign listings has also leveled off at around a median of 5.80 percent in 2004 though it is double the figure in 1995. In terms of dollar value of trading in foreign listings, London has continued to retain the largest absolute amount ($2.2 billion) and is second largest in terms of the fraction of total dollar trading (53 percent), after the Swiss Exchange (93.53 percent), which benefited greatly from virt-X, a facility for trading European blue-chip stocks initiated in 2001. The other large markets in absolute dollar terms are the NYSE and Nasdaq.

4. The New Research Initiatives

In this section, I will delineate five distinctly different initiatives by teams of researchers seeking to understand better the old and new phenomena in the world of international cross-listings. The one overarching theme of these new streams of research is the general dissatisfaction with the conventional wisdom that cross-listing stems primarily from an attempt by firms to break down investment barriers. This wisdom claims that the perceived net benefits stem from a lower cost of capital as the firm makes its

shares more accessible to nonresident investors who would otherwise find it less advantageous to hold the shares because of the segmentation of the markets by these barriers. What this market segmentation hypothesis fails to account for, and what the new research initiatives focus on, are additional corporate governance problems among management, dominant shareholders and public investors which can arise directly from globalization and which can, in turn, limit the perceived net benefits associated with it.

These ideas were articulated in a thought-provoking piece by my colleague, René Stulz, in the *Journal of Applied Corporate Finance* (Stulz, 1999).[8] He emphasized that differences might arise between management and investors due to informational problems and due to potential agency conflicts. Informational problems arise if management's and investors' assessments of a firm and the value its projects because management may have better information about their profitability that they cannot communicate credibly to the outside. Agency problems can arise as investors judge that management is making poor use of the capital provided as its own objectives differ from those of the investors. The thrust of his argument is that a firm's cost of capital will depend critically on its corporate governance system including both the internal controls, such as independent boards and effective management incentive compensation plans, and external elements that stem from capital markets and the overall institutional environment. When a firm cross-lists its shares on an overseas exchange, the impact on its cost of capital may be influenced less by the barriers that were finessed than by the new legal environment that protects more effectively minority investors, the better-functioning takeover market, and the more stringent disclosure environment the firm.

Stulz outlined a number of difficulties for the market segmentation hypothesis. The first difficulty arises from the fact that almost all of the empirical support for this hypothesis relies on event-study tests of the capital market reactions to listings and listing announcements. The problem is that the event-study abnormal returns are extremely small (1 to 2 percent, Miller, 1999) compared to the large changes in the cost of capital implied by shifting market risk exposures. It is true that, together with the run-up prior to

[8] These criticisms were originally laid out in May 1997 by Stulz who was invited to comment critically on the findings of my monograph study (Karolyi, 1998) at the NYSE Conference on The Future of Global Equity Markets in Cancun, Mexico. The NYSE provided the forum and support for him to develop these ideas further.

listing (19 percent over the year prior, Foerster and Karolyi, 1999), the long-run price reaction could be large enough, but only if the run-up stems from a partial anticipation of a U.S. listing. In addition, the negative post-listing decline (14 percent over the year following listing, Foerster and Karolyi, 1999), while not as large as the pre-listing run-up, negates a significant fraction of it.

A second criticism is that, if the driver of listing decisions is a lower cost of capital from eliminating investment barriers, then all firms for which the cost of capital would fall sufficiently to justify the costs of listing overseas would do so. In fact, we observe in almost every country a significant fraction of listed firms do not cross-list their shares overseas even though a critical fraction find it worthwhile to do so.[9] Third, abnormal returns cross-listing are observed for firms from countries that are substantially integrated in world markets and have been for some time. It is striking in Figure 2 of Forester and Karolyi (1999), for example, that Canadian firms experience as dramatic long-run capital market reactions to U.S. listings as European and Asian firms, given the long-standing evidence of North American equity market integration.[10]

A fourth criticism is that the market segmentation hypothesis cannot explain the time-series pattern of listings. As seen in Section 3, listings have continued to grow over the past ten years. With greater integration of markets over time, the net benefits of a listing should diminish since the cost of capital for companies is increasingly determined globally. We should have seen a reduction in U.S. listings when instead we saw an increase. The fifth and final criticism is that the conventional wisdom about segmented markets cannot explain why the share-price reactions are largest for exchange-listed firms (Miller, 1999) and why the post-listing share-price declines are smaller for listings associated with capital-raising activity (Foerster and Karolyi, 1999).

[9] Doidge, Karolyi and Stulz (2004, Table 1) shows that ten firms remain at home for every one which cross-lists.

[10] The Miller (1999) and Foerster and Karolyi (1999) studies have been actively critiqued not only for the robustness of their empirical findings but also for their rush to abandon conventional theories of the importance of international capital market segmentation for the cross-listing capital market phenomena. Doukas and Switzer (2000) show that these studies risk underestimating the extent of the gains from cross-listings because they fail to account for time-varying conditional expected returns, variances, covariances and market prices of risk due to regulatory changes and growing market integration. They focus on the U.S.-Canada case study, as did Jorion and Schwartz (1986) and Mittoo (1992a). Mittoo (2003), however, demonstrates significant changes in the market reactions to Canadian firms' cross-listing in the U.S. markets before and after 1990.

Having outlined the inconsistencies of the market segmentation hypothesis, Stulz (1999) calls for new research on the corporate governance issues. To guide researchers, he defines several important mechanisms typically used to monitor management and ones that are especially likely to be intensified by globalization in the form of cross-listings. The basic premise is that these mechanisms would vary across firms - even those from the same home-market - and any perceived weakness in these mechanisms could very well limit the capital market reactions one might otherwise expect.

1. *Independent Board of Directors*. The board is the most direct mechanism to monitor management, which plays an important role of disciplining managers if performance proves inadequate. For firms to succeed in global markets, investors must have confidence that the use of funds provided will be monitored; this is a particularly significant challenge for firms from segmented economies. Too often, boards of such companies are less than active and rarely independent of management.

2. *Certification in the Capital Markets*. The capital markets, and especially the investment bankers hired to play a certification role for firms selling securities to the markets, also provide an important monitoring function. Once again, companies from less developed markets seeking capital in global markets will rely on the certification of the most highly-reputed investment banks to secure lowest cost access.

3. *Legal Protections of Minority Investors*. The legal system plays two monitoring roles. It limits the ability of management or controlling shareholders to expropriate resources from public investors and it provides a mechanism for investors to exercise their rights. To the extent that firms cross-list shares in new markets with superior legal protections, they may be able to raise capital at a lower capital cost.

4. *Stringent Disclosure Requirements.* Public disclosure of information by firms is required by laws and regulations and failure to provide adequate information makes it expensive to raise capital. Cross-listing on a market with a stricter regulatory environment is one way for companies to commit themselves to ongoing and more rigorous disclosure.

5. *Active Shareholders.* Large shareholders, such as institutions, have the resources to invest in better monitoring. To the extent that cross-listing in a new market makes it easier to attract institutional investors - especially foreign and thus "outside" blockholders – the better arm's-length monitoring can yield lower capital costs.

6. *The Market for Corporate Control.* The market for corporate control, in terms of takeovers and leveraged buy-outs, can fill a monitoring role when internal systems fail. Firms that cross-list into markets with more active takeover markets present themselves with greater competition for control which benefits existing shareholders directly.

I believe it is Stulz's (1999) critique and his six different mechanisms for monitoring management that laid the groundwork for the five major research initiatives I discuss below. I will now discuss the most important studies that comprise each of the five initiatives. Some of the studies that

embody these initiatives focus on addressing one of the key criticisms of the conventional wisdom, some attempt to respond to a number of these criticisms, and others are only tangentially related to them. I offer no value-based judgements about which are more successful than others and proceed to outline these initiatives in no particular order.

A. Corporate Governance, Agency Conflicts and Legal "Bonding"

The ability of controlling shareholders or managers to take private benefits from their firms is an important aspect of corporate governance as it represents an important source of potential agency conflicts with public shareholders. After all, firms can raise external financing only to the extent that they can commit to return this capital to investors and not extract it for the controlling shareholders' or managers' personal uses. Various laws and institutions provide limits on how much wealth they can take from investors and thus make it possible for firms to raise external finance. There is a logical link between such private benefits and their firms' opportunities in the capital markets. The relation between private benefits and external finance implies that, from a manager's perspective, there are costs as well as benefits when resources are taken from shareholders. The value of having access to external capital, for example, may be large relative to the size of private benefits when the firm has superior investment opportunities that require external financing. In such circumstances, controlling shareholders and managers will wish to "bond" themselves to not take private benefits to ensure access to external markets.

A number of papers have suggested that one useful way to "bond" managers not to take excessive private benefits is to cross-list the firm's stock on an exchange that imposes higher legal and regulatory costs than the firm's primary exchange. Coffee (1999, 2002) and Stulz (1999) were the first to rationalize in this way the decision by non-U.S. firms to list on the NYSE or Nasdaq exchanges in the U.S. either directly or through an ADR program.[11] Coffee's studies emphasize the legal "bonding" mechanisms of U.S. listings in three forms: (1) the listing firm becomes subject to the enforcement powers of the SEC;

[11] There is still some debate about who originally presented the idea of legal bonding. For example, Licht (1998) argued that the U.S. securities regime enables both foreign and domestic issuers to credibly commit to high quality, comprehensive disclosure. Even in this early article, he questioned the importance of purely legal protections and identified possible negative, as well as positive, consequences of a complex legal regime governing the newly cross-listed issuer.

(2) investors acquire the ability to exercise effective and low-cost actions, such as class actions and derivative actions, not available in the home market (e.g. liability provisions of Section 11 of SEC Act of 1933); and (3) entry into the U.S. markets commits the firm (with exchange listings, at least) to provide fuller financial information in response to SEC requirements and to reconcile its financial statements with U.S. generally accepted accounting principles (GAAP). He, like Stulz (1999), also emphasizes the role of "reputational intermediaries" in U.S. markets, such as underwriters (in the case of capital-raising listings), auditors, debt-rating agencies, securities analysts as well as the exchanges themselves (via listing requirements), in providing additional scrutiny or monitoring that is unavailable in the home market.[12] He cites important case law unique to the U.S. on class actions, as well as common U.S. practices such as contingent fees, fee-shifting, as well as waivers of board structure and shareholder-voting-rights requirements for foreign issuers.[13]

The case for "bonding" is growing with a number of new empirical studies, but finds its original support in existing studies. Coffee (2002) cites the specific findings of Miller (1999) regarding the much higher announcement-day share price reaction for exchange listings versus SEC Rule 144a private placements and OTC listings. He argues that this is important because there are critical legal differences among these different types of listing vehicles, in addition to different reporting requirements (See Table II.1 in Karolyi, 1998). He also emphasizes the longer-run price reactions in Foerster and Karolyi (1999) and the less-dramatic post-listing declines (more permanent positive long-run returns) for Asian firms in their sample, which, Coffee argues, is consistent with several Asian countries having corporate governance systems that particularly expose minority shareholders to expropriation by controlling shareholders.

[12] The Fordham International Law Journal, Volume 17, 1994, Symposium Issue, contains a number of useful articles outlining U.S. regulations, litigation, tax and accounting issues for entering U.S. securities markets.

[13] Cheol Eun has argued that the conventional wisdom of the market segmentation theory and the new bonding hypotheses may not be mutually exclusive motives for cross-listings. He believes that imperfect international markets prompt intermediation efforts and that cross-listings are one form of intermediation designed to mitigate the effects of segmented or imperfect markets. However, once markets become more integrated, the demand for intermediation becomes weaker and so does the integrating effect of cross-listings. At that point, cross-listings may still be sought out but for other reasons, such as credible legal bonding, enriching the information environment, and so on. No formal research initiative of such dynamics in the motivations for cross-listings exists to my knowledge.

Reese and Weisbach (2002) examined the composition and post-listing behavior of foreign firms that cross-listed in the U.S. and concluded that the evidence corroborates the bonding hypothesis. They surveyed 1,158 cross-listings and benchmarked them with 17, 381 domestic firms to evaluate the decision to list. One of their principal findings, obtained utilizing logistic regression analysis, was that the legal systems from which the firms come influence the likelihood of listing: companies from countries with poor legal protections were more likely to list in the U.S. and, especially, on major U.S. exchanges. Their other main finding was that firms that cross-list in the U.S. significantly increase their equity offerings following a U.S. listing in the U.S. or even outside the U.S. (111 offerings within two years after listing versus only 46 offerings before). The increase in equity offerings outside the U.S. was especially strong for companies from weaker legal systems and this finding is seen as inconsistent with the market segmentation hypothesis and consistent with the legal bonding hypothesis.

Doidge, Karolyi and Stulz. (2004) offer empirical support for the bonding hypothesis avoiding the severe limitations of event studies. They document a large valuation premium on the order of 16 percent for firms from around the world cross-listing in the U.S. Their "cross-listing premium" is measured for a specific year (1997) in terms of Tobin's q for a sample of 712 firms relative to a benchmark sample of 4,078 publicly-traded companies from around the world. They develop a simple model of the cross-listing decision from the perspective of a controlling shareholder who pursues her own interests. Their model offers a number of predictions about the premium, including: (1) the premium is higher for companies from countries with poorer investor protections, (2) the premium is related to future growth opportunities, especially for companies from countries with poorer legal protections, and (3) the premium is greater for exchange-listings than OTC listings and SEC Rule 144a private placements. They corroborate each of these predictions with their sample; for example, the cross-listing premium for exchange listed firms exceeds 37 percent. The important aspect of the study is that the cross-listing premium persists even for firms that may have cross-listed a number of years earlier.[14]

[14] However, Levine and Schmukler (2004) have recently challenged the findings of Doidge, Karolyi and Stulz. (2004) by questioning whether the Tobin's *q* ratios for such "internationalizing" firms (their term) persist beyond

Doidge (2004a, 2004b), Ayyagari (2004) and Doidge, Karolyi, Lins, Miller and Stulz (DKLMS, 2005) offer additional support for legal bonding by focusing on the role of ownership structure before a U.S. listing and changes in ownership firms around the listing event itself. Doidge (2004a) shows that emerging-market firms before listing in the U.S. do have large controlling shareholders and that, though ownership concentration does not become more diffuse, important control changes occur. Ayyagari (2004) broadens the analysis to developed as well as emerging market countries and finds a similar result, except that she uncovers that firm-specific attributes are important drivers of the control-change event, especially the capital structure of the firm and its foreign income growth rate.[15] Doidge (2004b) implements an innovative experiment by measuring private benefits of control through voting premiums in dual-class shares. He identifies 137 companies with dual-class shares from 20 countries around the world that have cross-listed in the U.S. The null hypothesis of legal-bonding offers that these premiums should be much lower because of the tougher legal protections in the U.S.; indeed, he finds that these premiums are 43 percent lower relative to the 745 domestic firms. Most interestingly, he shows (in his Figure 2) that the voting premium decreases in event-time for 37 of the firms for which he can obtain identifiable announcement dates.[16] DKLMS (2005) employ logistic regression and duration analysis of a broad sample of 4,000 firms from 32 countries around the world to show that the presence of a large controlling shareholder in the ownership structure of the firm significantly decreases the likelihood of a U.S. listing, even after controlling for a number of other country and firm-level attributes. These facts all suggest that constraints in the U.S. capital markets do exist for such firms and they impact actions taken.

A number of refinements and challenges to the bonding hypothesis have also arisen. The main challenge is that enforcement risk associated with U.S. listings is greatly exaggerated. Licht (2001a,

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one year after the cross-listing event. The "vanishing *q*" they uncover leads them to question the enduring effect of bonding to better governance systems through this vehicle. Earlier, even though they did not have bonding as a motivation, Sundaram and Logue (1996) uncovered similar event-time effects in valuation ratios.

[15] Barzuza (2004) rationalizes the transactions in controlling blocks around the U.S. listing by arguing that U.S. listings represent less of an opportunity to "bond" to limit consumption of private benefits at the expense of public investors and more of a "secondary signaling opportunity" that high private benefits of control are available in their firm for other potential controlling-block buyers

[16] Benos and Weisbach (2003) provide a summary of the literature on private benefits and U.S. cross-listings.

2001b, 2003) argues that the SEC is an inefficient body that does not enforce corporate governance rules for foreign issuers and maintains a "hand-off" policy for the most part. Siegel (2005) assesses the SEC enforcement policy towards foreign firms listing in the U.S. by considering the actions towards Mexican firms with ADRs between 1995 and 2002. He finds that U.S. regulatory response to cases of "asset tunneling" has been weak and that the SEC has failed to act to recover "billions of dollars." Most condemning, he identifies only 25 private legal actions against foreign firms and their insiders since the enactment of the earliest federal securities laws in 1933. Coffee (2002) argues that, though the numbers of actions are few, some of the cases have been important and noticed and that the numbers are biased downward by the many cases settled out of court. It is important to acknowledge that Siegel does allow for, and likely supports, a form of bonding, not through a pure legal or enforcement interpretation, but through "reputational intermediaries," which Coffee and Stulz both advocate. Another counter-criticism stems from the credibility of the threat of legal action as much as from actual events. Tribukait (2002) studies stock price reactions of Mexican firms around earnings announcements and shows that those without ADR listings in the U.S. have significant price reactions about 31 days before its public release, while those with U.S. listings have reactions closer to the actual announcement date. He suggests that these pre-announcement reactions are likely to be the work of corporate insiders and the greater investor protections from U.S. listings prevent them from stepping ahead of the public investors.

Several other contributions that challenge the bonding hypothesis are worthy of mention. King and Segal (2003) examine cross-listing premiums for Canadian firms relative to their domestic counterparts, but they argue that these arise only for firms that attract a sufficient amount of turnover in the U.S. markets. This pre-condition is not an obvious element of the bonding hypothesis at first blush. However, an active trading environment in the U.S. may still reflect the positive effects of bonding through the activities of "reputational intermediaries" like analysts or the media, a possibility King and Segal accept. Pinegar and Ravichandran (2003) uncover some peculiarities in voting premiums (namely, their absence!) for the case of Mexican firms that actually have ADR listings on both of the dual classes of shares ("sibling ADRs"). They show that this strange discount cannot be explained by differences in

cash-flow rights, market risks, liquidity, voting control of major blockholders or ownership restrictions. The sample is not large (5 firms), but it calls into question the usefulness of dual-class shares in measuring private benefits for cross-listing firms. In an even more aggressive challenge to the importance of bonding through cross-listings, Pinegar and Ravichandran (2004) focus on firms that pursue SEC Rule 144a private placements in the U.S. for which legal remedies for potential breaches of contracts are unavailable in U.S. courts and especially those with high ownership concentrations from countries with weak legal systems (Taiwan, Korea, India). These firms should experience no impact on Tobin's *q* from the listing event and yet they do (contrary to Doidge et al.'s findings). They propose that the firms are employing other mechanisms to supplant legal bonding, such as voluntarily disclosing more information than required.[17]

Burns (2004) examines whether cross-border acquisitions of U.S. firms by non-U.S. acquirors with listed ADRs are more likely to be financed with share exchanges than cash and whether the acquisition premiums are lower compared to those acquirors without listed ADRs. She identifies 438 bids between 1984 and 2000 and confirms both results: 48% of cross-listed acquirors use equity versus only 3% of non-cross-listed acquirors and the premiums are 6% lower for cross-listed acquirors (23.7% versus 29.5%). The interesting additional result she uncovers is that the use of equity does still depend on the quality of home-country legal protections, which should no longer play an important role in the financing choices of a cross-listed firm in the U.S. by the "bonding hypothesis." It may be that these mergers and acquisitions represent one more set of situations in which bonding is "not a complete shield for minority shareholders" as Coffee (2002) warns.

[17] O'Connor (2004) also seeks to leverage as a research design differences in "bonding" constraints for cross-listing firms pursuing exchange-listings and those issuing through Rule 144a private placements. He tests for changes in dividend-payout strategies around the listing. The exchange-listed firms do pay less dividends following a U.S. listing, and, since listing is a substitute mechanism to enhance the fair treatment of minority investors, he interprets this finding as consistent with bonding. However, like Pinegar and Ravichandran (2004), he finds that the Rule 144a firms also pay less dividends, which is inconsistent with bonding. For the debate over "legal bonding" as a motivation for listings, this is a critical question as bonding would suggest the stricter regime of corporate governance should reduce the diversion of cash flows by controlling insiders and less about a change in the risk premium. Hail and Leuz (2005), however, offer some useful new insights on this "decomposition" of valuation effects of cross-listings and indicate that legal bonding is a stronger driver of the lower cost-of-capital estimates than of any cash-flow effects.

What do we learn?

One important reason why firms may choose to cross-list their shares on overseas markets is that it represents an opportunity to improve a firm's corporate governance system. Cross-listing is a vehicle through which a firm's management and/or its large, controlling shareholders can "bond" themselves to a legal system with more effective protections for minority shareholders against managerial self-dealing or excess consumption of private benefits of control. Researchers have uncovered supporting evidence that weaker legal systems at home are associated with more concentrated ownership structures and that, among such firms, relatively few pursue cross-listings in markets with stronger legal systems. If they do pursue them, however, higher valuations and improved capital raising opportunities obtain. Doubts about the "bonding" hypothesis abound, especially in regards to the effectiveness of enforcement actions by regulatory authorities against such firms in these new markets.

B. Changes in the Information Environment of Cross-Listing Firms

A number of researchers have suggested that information disclosure plays an important role in a U.S. listing decision. They suggest that valuation changes around listings for firms and valuation differences between U.S. firms that choose to list in overseas markets and those that do not has less to do with barriers to investment and more to do with changes or differences in information flows. As noted above, preliminary support for such an alternative hypothesis is found in studies by Miller (1999) and Foerster and Karolyi (1999), but it is a recent series of empirical papers that has sharpened our focus.

An important reference point for this new research initiative is the early work by Saudagaran (1988), Biddle and Saudagaran (1989) and Saudagaran and Biddle (1992, 1995) that was featured in my 1998 monograph. These studies presented empirical evidence on the cross-sectional association between the observed exchange choices of firms around the world and a number of factors. Among the most important factors they uncover is the *negative* influence of mandated accounting, listing and regulatory requirements and voluntary disclosures dictated by the expectations of market participants. As a result, the finding that only large-capitalization firms relative to that of the home market and those with high ratios of foreign-to-total sales could justify the direct and indirect disclosure costs.

In spite of the predictions of these early papers, listings on the exchanges with the most stringent disclosure requirements, the NYSE and Nasdaq, accelerated during the 1990s. As a result, a series of papers by Cantale (1996), Fuerst (1998) and Moel (1999) developed analytical models to rationalize why

firms would, in fact, optimally choose to list on markets with higher levels of information disclosure and why investors would value such firms higher. The common elements of these analytical models are that they assume some form of information asymmetry or market incompleteness (Merton, 1987) and that a signaling equilibrium is established in which firms try to communicate their private information regarding their quality to outside investors by listing their shares in overseas markets. Moel (1999), for example, develops a two-country, two-security equilibrium model in which security prices increase as a function of the level of information disclosure. He calculates the equilibrium optimal information disclosure as a function of firm and market parameters, such as firm size, volatility and the costs of information disclosure. The model leads to testable hypotheses relating disclosure levels to firm- and country-specific factors. For example, the model predicts that firms with higher firm-specific volatility, firms operating in a low disclosure quality and low information trading environment, and larger firms will optimally disclose more information.

Fuerst (1998) further conditions the decision on firms that are highly profitable because it is the firms' future prospects that must be credibly communicated in the stricter regulatory regime. From this, he generates additional predictions that firms that list on U.S. markets would experience abnormal operating performance, especially from less strict regulatory regimes, and that U.S. firms listing overseas would not have abnormal operating performance. He also conditions that the market reactions to the cross-listing announcement would be correlated with the expected improvement in operating performance.

Huddart, Hughes and Brunnermeier (1999) use a rational expectations model to examine how public disclosure requirements affect listing decisions by controlling shareholders but they add the further complication by modeling how these decisions to list on overseas exchanges guide decisions of discretionary traders seeking liquidity across the different markets in which the shares trade. The key resulting equilibrium, which they refer to as a "race for the top," is one in which exchanges compete for order flow by lowering their costs of trading and by raising their disclosure requirements. Chemmanur and Fulghieri (2005) have recently extended this effort but have concluded that firms benefit from a

presence at an exchange with a high reputation or stringent disclosure requirements only if investors can produce information about them at a low cost at the same time. They predict neither a race for the top nor to the bottom, but a natural segmentation among exchanges based on optimal regulation: exchanges with different reputations and listing standards can co-exist. A corollary of their model also implies that cross-listing by foreign firms on a high reputation exchange with stricter disclosure requirements should be followed by increased analyst coverage since increased information production is a primary factor motivating listing.

The empirical evidence is broadly supportive of the predictions of these models. Some studies focus on the listing choices of firms across exchanges, others, on the impact of the improved information environment associated with increased analyst and media coverage markets on capital market reactions to the listing decisions, and yet another series consider the consequences of increased disclosure costs on the portfolio holdings of foreign securities by investors. Baker, Nofsinger and Weaver (2002) employ event-study tests of foreign listings in London Stock Exchange (LSE) and the NYSE noting that the listing costs are much higher on the NYSE. They show that NYSE listings are associated with greater analyst coverage and heightened media attention ("hits" in the *Wall Street Journal* versus *Financial Times*), especially for those listings that are associated with an equity offering. The most interesting results, however, are those associated with the two-factor international asset pricing model tests of Foerster and Karolyi (1999) in which they show that the pre-listing run-up and post-listing price declines are much more dramatic for NYSE listings than LSE listings. They associate these differential capital market reactions to the greater increases in visibility that foreign firms experience with U.S. listings.

Two other teams of researchers have focused specifically on the role of analysts around international cross-listings. Lang, Lins and Miller (2003, 2004) and Bailey, Karolyi and Salva (2005) consider not only the increased number of analysts following non-U.S. stocks once they list in the U.S., but also the improved accuracy of their forecasts, the resulting higher valuations, and the more volatile share price reactions around earnings announcements. Lang, Lins and Miller (2003) examine 235 U.S. listed firms relative to a benchmark sample of 4,859 others from 28 countries and show that U.S. listed

firms have 2.64 more analysts (relative to median number of 4) and the accuracy of their forecasts increases by 1.36 percent, as a fraction of the stock price. They show that Tobin's q is higher (Doidge et al.'s "cross-listing" premium) and that it is significantly and positively related to the increased analyst coverage and improved accuracy. Lang, Lins and Miller (2004) extend this analysis to show that these effects are greater still among firms that come from countries with poor treatment of minority shareholders or those that have large family- or management group-dominated large blockholders. In other words, they show that information intermediaries provide the most value for firms that have the least protection for minority shareholders.

Bailey, Karolyi and Salva (2005) examine the cumulative absolute abnormal returns and abnormal trading volume around earnings announcements before and after U.S. listings for 427 firms from 46 countries. They show that the 3-day abnormal return volatility increases from 2.75 percent to 3.38 percent and that this change is significant even after controlling for the number of analysts, the forecast surprise relative to the median analyst, and the dispersion of their forecasts. The most surprising result, however, is that this increase is concentrated in developed-market firms and in those that list in the U.S. with SEC Rule 144a or OTC, not exchange listings, events which should be associated with the most negligible change in the information environment. They explore whether these Rule 144a private-placement firms incur other changes in transparency, disclosures, or governance attributes, but find nothing and ultimately leave us with a puzzle.

Lang, Raedy and Yetman (2003) offer an important caution. They provide a matched-sample experiment of the characteristics of local-GAAP reported earnings for firms listed in U.S. markets and those that are not. They show that U.S. listed firms are more profitable and trade at higher multiples, they are less prone to earnings management and report accounting data that is more strongly correlated with share prices. This initial effort is important for other studies of changes in the information environment to the extent that self-selection plays a part in the findings; after all, changes in analyst accuracy may have less to do with the event of listing in the U.S. than other fundamental changes management undertook in the firm in anticipation of the listing. Each of these three studies (Lang, Lins, and Miller, 2003, 2004;

Bailey, Karolyi and Salva, 2005) does incorporate a variety of robustness tests for endogeneity, but the concern lingers.[18]

Whether the capital market reactions around information events following a U.S. cross-listing are consistent with a richer information environment or not, the appetite of U.S. investors for such securities appears to be strongly related to accounting choices. Bradshaw, Bushee and Miller (2004) obtain data on 13 different accounting disclosures from the Worldscope database comprising 89,078 firm-year observations (1989-1999) and intersect this data with the Spectrum ownership database constructed from quarterly SEC 13F filings of major U.S. institutions (more than $100 million in assets). They show that higher levels of U.S. GAAP conformity is associated with significantly higher U.S. institutional ownership and, in a separate lead-lag analysis, incremental new disclosures that conform with U.S. GAAP spur on higher institutional ownership. It is clear that U.S. institutions exhibit a strong preference for higher-quality financial information and U.S. cross-listed firms, as a target universe of stock holdings, are no exception.

Another group of researchers have sought to extend the early studies by Saudagaran (1988) and Biddle and Saudagaran (1989) on the motivations for international cross-listings. Unlike so much of the empirical work on cross-listings, these studies have explored the full matrix of global cross-listings comparing different home and host countries. Also, unlike the important precedents, they explore factors in addition to cost of capital, valuations, disclosure costs, and liquidity, such as the scope of international trade, tax-haven status, similar language, culture and geographical proximity. The important contributors to this new line of research include Pagano, Randl, Roell and Zechner (2001), Pagano, Roell and Zechner (2002), Claessens, Klingebiel and Schmukler (2003) and Sarkissian and Schill (2004, 2005).

[18] Endogeneity issues loom large in much of the cross-listing literature, especially in regards to the studies of the motivations for listings. More studies are attempting to employ statistical procedures to deal with the fact that legal bonding or disclosure choices aside, firms that choose to list their shares on overseas markets may already have higher valuations or experience significant pre-listing returns because of some other unidentified firm-specific or country-level factor. An important research opportunity would be to devise tests that reliably disassociate the motives for listing from the capital market consequences of the event of interest.

Pagano, Roell and Zechner (2002) emphasize the importance of geography in listing choices. They show that during the period from 1986 to 1997, many European companies listed on U.S. exchanges while the number of U.S. companies listing in Europe declined. The European companies were primarily large, recently-privatized firms with expanding foreign sales. Those that were attracted to the U.S. were concentrated in high tech industries. Those European companies cross-listing on other European exchanges were typically not growing quickly and experienced significant increases in leverage. In Pagano, Randl, Roell and Zechner (2001), they emphasized, however, cultural homogeneity as a factor and measured it in terms of three groups: (1) Austria, Germany, the Netherlands and Switzerland, (2) Belgium, France, Italy and Spain, and (3) U.K. and U.S. They found that companies cross-list within the same group 33 percent more often than would be predicted by random assignment.

Sarkissian and Schill (2004) find general support for many of the established factors, such as disclosure costs, liquidity and cost of capital, but they emphasize proximity preference as a surprisingly important factor, especially for non-G-5 (France, Germany, Japan, U.K., and U.S.) countries. They compute proximity as the distance between capitals of countries in mega-meters. The follow-up study, Sarkissian and Schill (2005), offers an even more interesting perspective on the importance of this matrix of overseas listings by evaluating the longer-run (up to 60 months before and after) capital market reactions to listings decisions. They show for 1,298 listings spanning most world markets that the cost-of-capital gains are more modest than those reported in earlier studies (Foerster and Karolyi, 1999, of U.S. listings alone). On average, the cost-of-capital decline is only 2.5 percentage points and they show that the magnitude of the gain is greater for cross-listings across countries with large cross-product-market trade. The authors interpret this finding as demonstrating the importance of information and investor familiarity in cross-listing decisions.

Claessen, Klingebiel and Schmukler. (2003) offer a similarly broad analysis of what firms from which countries go abroad, although they define accessing international markets more broadly than just cross-listings. They also include capital raising activity in overseas markets without cross-listings in their definition. They document similar firm characteristics for their sample of 4,092 “international” firms

relative to their 13,755 "domestic" counterparts, including larger market capitalization, greater liquidity, higher valuations, performance and foreign sales, but they emphasize the importance of legal bonding as a motivation for internationalizing a firm.

What do we learn?

When firms raise funds from public markets, they must not only provide extensive disclosure at the time of issuance, but also commit to furnish information on an ongoing basis. The more information they provide and the stronger the commitment to provide it continuously, the less costly it is for investors to monitor management and, hence, the more favorable the terms and conditions of financing. Cross-listing on an exchange with extensive disclosure requirements is one credible way for companies from around the world to commit to extensive and continuous disclosure. Listings on U.S. markets are associated with significant improvements in their information environment, including increases in media and analyst coverage, accuracy of analysts' earnings forecasts, which are, in turn, associated with higher valuations. Cautions arise about the impact of disclosure activity of cross-listed firms because they appear to vary significantly in their discretionary disclosure choices and because those seeking U.S. listings disclose significantly less than comparable U.S. firms. Evidence that language, culture and geographic proximity play a role in cross-listing decisions around the world also creates additional complexities for an explanation based strictly on information disclosures.

C. Multi-market Trading and Liquidity, Price Discovery and Arbitrage

With enhanced globalization of financial markets, more firms are cross-listing their shares overseas, but does this necessarily lead to a more liquid trading environment for the shares? Does this listing represent a zero-sum game with increased trading in the overseas market being offset by reduced trading in the home market? Is the increased trading in the overseas market permanent or just a transitory effect of the listing event itself? Does the new competition for order flow from multiple markets trading the shares affect price determination? Does information that arises in the new overseas market contribute to price discovery? Or, do the markets lead to greater fragmentation and thereby generate opportunities for arbitrage, or systematic deviations from price parity? These are some of the key questions that have been the focus of numerous researchers specializing in the microstructure of multi-market trading.[19]

[19] There is much at stake for the depositary banks in the debate over the liquidity of ADR programs. Several of the banks have created "liquidity solutions teams" that work with individual issuers in an investor relations advisory capacity to "build and create closer bonds with institutional investors and broker-dealers to promote the benefits of ADR ownership and conversions" (JP Morgan, Enhancing ADR Liquidity, 2005 Outlook, February 2005).

It is important to acknowledge that the research interest in multi-market trading and liquidity, unlike that of the bonding hypothesis, agency conflicts and information asymmetry problems, easily pre-dates the Stulz (1999) critique. However, with better-quality transactions data available for more markets around the world (beyond the U.S.) and with more rigorous research methodologies at our disposal, we are learning that liquidity (spreads, volume, volatility) changes for newly cross-listed firms may very well be related closely to changes they incur in the information environment, the firm's ownership structure and perhaps even corporate governance systems. Whether and how market intermediaries, like analysts, investment bankers, institutional investors, take an interest in monitoring management or the controlling shareholders of these firms may stem from the liquidity that arises in the new market for their shares. Similarly, whether liquidity arises in the new market may stem in part from the presence of such monitoring activities by intermediaries.

Price discovery is defined as the search for an equilibrium price and is a key function of a stock exchange. Studies, such as Harris, McInish, Shoesmith and Wood (1995, 2002) and Hasbrouck (1995) have examined the relative contribution of the NYSE and regional exchanges to the price discovery of U.S. stocks trading on these exchanges. Both Harris, McInish, Shoesmith and Wood (1995, 2002) studies employ the common-factor error-correction estimation methods of Gonzalo and Granger (1995) to measure how much prices in different trading venues adjust due to cross-market information flows; Hasbrouck, on the other hand, employs a common-trends vector autoregression (VAR) representation and computes the fraction of long-term total variation in returns explained by each market from a variance-decomposition analysis, which he calls the "information share." A number of studies of multi-market trading have applied these very techniques. The challenge, of course, is the limited amount of quality intraday transactions-level data available in the home markets that is necessary to operationalize such models.

Early studies simply applied these techniques to non-synchronous closing prices across markets (Hauser, Tanchuma and Yaari, 1998, for six Israeli stocks); newer studies exploit specialty transactions data. Eun and Sabherwal (2003) applied Harris et al.'s error correction models to transactions data for 62

Canadian firms cross-listed on the Toronto Stock Exchange (TSX) and the NYSE or Nasdaq for three months in 1998. Overall, they find strong evidence that considerable price discovery takes place in the U.S. (for 58 of 62 stocks) though the price adjustments of U.S. prices to deviations from Canadian prices are much larger in absolute value (and significant for all but one stock, Biovail Corporation). They perform cross-sectional regressions of these estimated relative contributions of the two markets and find that the most important variable is the proportion of total trading volume in the U.S. That is, the higher the fraction of total trading taking place in the U.S., the higher is the contribution of the U.S. market to price discovery.

Grammig, Melvin and Schlag (2004) apply the Hasbrouck methodology to three U.S.-listed German stocks (DaimlerChrysler, SAP and Deutsche Telekom) using intraday data from the Frankfurt Stock Exchange's XETRA system for the three hour overlap of trading hours during the day. They extend their analysis to a trivariate system to include euro/U.S. dollar exchange movements. For their three-month period of analysis in 1999, they find that XETRA prices dominate NYSE prices and exchange rate effects in price discovery, although NYSE prices explain almost 18 percent and 10 percent of total variation of XETRA SAP and DaimlerChrysler prices, respectively. Similar results obtain in their extended study (Grammig, Melvin and Schlag, 2005) for 17 stocks from Canada, France, Germany and the U.K. cross-listed on the NYSE as well as for Phylaktis and Korczak (2005) for 95 cross-listed British and French stocks. Both studies are able to exploit a large enough cross-section of stocks to show, like Eun and Sabherwal did, that the extent of U.S. price discovery is positively related to the liquidity of U.S. trading.

Hedvall, Lilheblom and Nummelin (1998) find a consistent result for Nokia's NYSE and Helsinki prices from 1994 to 1996. But in this case the NYSE captures almost 60 percent of the post-listing trading volume, so it is not surprising that the Gonzalo-Granger variance decomposition shows that the NYSE plays the dominant price-discovery role. Pascual, Pascual-Fuster and Climent (2001) extend this same technique for six Spanish stocks using two-hours overlapping periods for the year 2000. Menkveld, Koopman and Lucas (2003) examining one year of transactions data on seven major Dutch firms (such as

Aegon, Ahold, and KLM), extend the analysis to incorporate information from U.S. trading during the overnight non-overlapping period as a benchmark period of activity. They uncover important price and quote activity around the NYSE opening for these stocks. The consequences of non-overlapping trading hours may not be a critical factor in such decompositions; von Furstenberg and Tabora (2004) show similar durability in price innovations for two Mexican stocks (Grupo Televisa and Telmex-L) that stem from the home market where the most of the trading takes place.

Since price discovery seems to be critically related to the proportion of actual trading activity that takes place across competing markets, a logical question is to ask what factors influence where trading activity is likely to take place. Although still a NYSE working paper, Pulatkonak and Sofianos (1999) is the most comprehensive analysis of this question to date. They examine the 1996 global trading data on 254 NYSE-listed non-U.S. stocks. On average, 34 percent of trading takes place on the NYSE, but the more interesting statistic is the wide range of observations from as low as 1 percent NYSE trading for a number of Japanese stocks to as high as 95 percent NYSE trading for several Latin American stocks. They perform cross-sectional analysis of these outcomes by firm on country-specific characteristics and firm specific characteristics. Country-specific characteristics are factors such as time-zone "distance," home-market commission rates, whether the countries are emerging or developed, and firm-specific characteristics are factors such as size, whether the listing was associated with a capital-raising, and average price levels to gauge minimum tick-size constraints. Altogether these factors explain 64 percent of the cross-sectional variation, but it is time-zone that is the most dominant factor: companies with home markets that trade around the same time-zone as the U.S. are likely to be more active on U.S. markets.

One issue is whether the form of the cross-listing in the U.S. matters for understanding where the trading activity gravitates. Karolyi (2003) provides a complementary clinical study of the DaimlerChrysler global registered share (GRS) launching in November 1998. Daimler Benz had been trading as an ADR since October 1993 and initiated with the NYSE the GRS as a more fungible alternative for cross-border trading and settlement. Karolyi shows, in fact, that U.S. trading volume, which had averaged around 35 percent before 1998, migrated back to Frankfurt dramatically within six

months. He acknowledges that other important factors may well have played a role, such as risk-arbitrage selling given that it was part of an acquisition of Chrysler and index-based selling given that, as a result, Chrysler was dropped from the S&P 500 index. The clinical study concludes that the type of security is unlikely to be a factor in explaining the global distribution of trading.

One possible consideration in price discovery and is the role of market makers for non-U.S. stocks. Bacidore and Sofianos (2002) evaluate NYSE specialist trading in non-U.S.stocks on the NYSE. Using proprietary data, they find that specialist closing inventory positions are closer to zero than those in U.S. stocks, and that specialist participation and stabilization rates are higher than those in U.S. stocks, especially for those from developed markets. Overall, non-U.S. stocks have wider spreads with less depth. They argue that this outcome is due to higher information asymmetry and adverse selection risks for which market makers and other liquidity providers require additional compensation.[20] Moulton and Wei (2005) and Phylaktis and Korczak (2004) expand further the analysis of specialist trading activity in cross-listed stocks to show how competitive forces affect market quality patterns intraday. Moulton and Wei show that quoted spreads, effective spreads and realized spreads are all significantly lower for European cross-listed stocks when their home markets are trading due, they believe, to the availability of substitutes for investors. Phylaktis and Korczak (2004) find that the concentration of stocks from a given country that is managed by an individual specialist increases the U.S. share in price discovery (using again the Gonzalo-Granger approach) through the reduction in information asymmetries.

Drawing on the potential importance of specialists in making a market for cross-listed stocks, Baruch, Karolyi and Lemmon (2005) develop a stylized model that hypothesizes that trading volume is likely to migrate to markets in which the cross-listed shares are more likely to meet "peer" companies. The idea is that market makers are in this way better able to infer information about prices and order flow

[20] These adverse selection risks may reveal themselves in surprising ways. Chung (2004) and Eleswarapu and Venkataraman (2005) both show that the effective spreads of trades in NYSE-listed ADRs are significantly lower for stocks from countries with better ratings for judicial efficiency, accounting standards and political stability. Chung specifically shows that many Asian-based ADRs endured significant selling pressure (lower bid depth) during the Asian financial crisis of 1997, but this effect was especially strong for firms in poorer investor-protection countries.

for the companies that they handle from the "peers" that they can observe. They operationalize the theory by proposing a proxy measure in the correlation of returns of the cross-listed stock with those of other stocks traded in the market, which can represent not only other foreign stocks listed on the market but also domestic stocks trading locally. The higher the correlation of the cross-listed stock with the other stocks trading in the new U.S. market, the higher the U.S. share of trading. This directly testable prediction is validated by an analysis of weekly trading volume for a 10-year period in 275 non-U.S. stocks cross-listed on U.S. exchanges. Halling, Pagano, Randl and Zechner (2005) uncover a similar degree of cross-sectional variation in the magnitude of foreign trading for a sample of 111 European cross-listings in other markets, but they also show that there is also considerable variation in the persistence of that foreign trading following the listing event itself. They find, on average, a significant decline in foreign trading associated with a "gravitational pull" of the home market, but that this phenomenon is weaker for smaller, more export- and technology-oriented companies and for those that list on markets with lower trading costs and better insider-trading protections than at home.

An important limitation of the studies of price discovery is that any inferences about the relative importance of price discovery are necessarily a joint hypothesis with the dynamic model of price discovery. To the extent that the Gonzalo-Granger error-correction model or Hasbrouck's common-trends model is mis-specified, we may be mis-estimating the scope of influence of the new overseas market. As a result, a number of recent studies have shifted to a *static* analysis of price-determination in the competing markets for order flow. These authors directly extend the earlier tests of price parity, or arbitrage, between the cross-listed prices and those in the home market on a currency-adjusted basis (Kato, Linn and Schallheim, 1991, Wahab, Lashgari and Cohn, 1992, Park and Tabakkol, 1994, Miller and Morey, 1996). Recall that the early efforts with moderately small samples had found no deviations from price parity. Several new studies with better methodologies, broader samples and higher frequency data suggest otherwise.

Ji (2004), Gagnon and Karolyi (2005) and Koumkwa and Susmel (2005) offer the most useful contributions. Ji and Gagnon and Karolyi both investigate a broad cross-sectional sample of non-U.S.

stocks cross-listed on U.S. exchanges and evaluate the existence of price deviations intraday by matching end-of-day prices in the home-market with a synchronous intraday quote or transaction price in the U.S. market using the NYSE's Trade and Quote (TAQ) database. Gagnon and Karolyi find that the deviations for their 589 pairs during the 1990s mostly lie within a 20 to 85 basis point band, but, for some stocks and in some quarters, these can widen substantially (from a 66 percent premium to an 87 percent discount). Both studies evaluate the time series dynamics of the returns on the home-market ordinary/ADR pairs by regressing them on home and U.S. market as well as exchange-rate return factors and uncover substantial systematic patterns ("excess comovements") in the deviations.[21] Ji seeks to explain these excess comovements in terms of the ownership structure of the stocks and finds that a higher U.S. institutional following is associated with larger systematic deviations from parity; Gagnon and Karolyi examine a broader array of country- and firm-level attributes and show that the distribution of the trading volume matters. Specifically, stocks for which the U.S. trading volume is proportionally higher are associated with higher excess comovements of the ADR shares with the U.S. market index returns. Koumkwa and Susmel use a small sample of 21 Mexican ADRs and home ordinary shares, but they employ an innovative multiple-time-series technique (ESTAR, Exponential Smooth Transition Autoregressive) that allows for non-linear convergence in the price deviations. The model shows considerable potential from a statistical vantage.

One potential weakness of the Ji, Gagnon and Karolyi and Koumkwa and Susmel studies are that they focus on *systematic* patterns across stocks and/or time that can mask interesting and important firm-specific deviations from arbitrage that might occur specifically around certain events.[22] Rabinovitch, Silva

[21] These factors are not chosen randomly. These multi-index models are found in early event-study tests of cross-listings. Also, Patro (2000) investigates 123 ADRs from 16 developed and emerging countries. He constructs separate ADR and home-stock portfolios by country and regresses their monthly time-series of returns on home-market and global market risks as well as exchange rates. He finds that ADR portfolios have distinctly smaller exposures to currency fluctuations than the home portfolios. He also shows that ADR portfolios have significant exposures to both home-market and global market risks, whereas home-stock portfolios have no exposure to global market risks.

[22] Blouin, Hail and Yetman (2005) have extended the Gagnon and Karolyi analysis to evaluate the role of shareholder-level taxes for arbitrage gaps. They show how an unexpected reduction in U.S. capital gains taxes at the announcement of the 1997 budget accord changed the pricing of cross-listed shares relative to home-market ordinaries, widening the gaps by 40 basis points, on average.

and Susmel (2003) directly evaluate returns spreads between 14 Chilean and 6 Argentinian home-market/ADRs stock pairs. They employ a similar non-linear STAR model as Koumkwa and Susmel, but the uniquely interesting feature of the study is that Argentina had a fixed U.S. dollar exchange rate regime (currency board) with no restrictions on capital flows, while Chile freely-floated its exchange rate but had foreign investment restrictions to 2000. The authors show that the estimated arbitrage trading cost (average daily returns spreads) in Argentina was 1.14 percent, much lower than the 1.37 percent in Chile. Further, they showed a more dramatic mean-reversion from large "gaps" of 42 percent in Argentina relative to only 31 percent in Chile. Interestingly, two studies follow-up on these findings by studying the elimination of the Argentinian currency board's U.S. dollar peg in late 2001 and its effect on the ADR market. Melvin (2004) and Auguste, Dominguez, Kamil and Tesar (2002) show that significant arbitrage "gaps" arose (ADR premium) with the expectation of a peso devaluation and given the capital controls that were imposed by the government ("corralito").

What do we know learn?

Cross-listing shares of a company's stock allows for market-makers from more than one market to compete for order flow in those shares which complicates the price discovery process. The home market appears to continue to play a dominant role in price discovery, but new evidence suggests that the new markets – often, the U.S. exchanges - are playing an increasingly important role. There is considerable cross-sectional variation across firms that researchers associate with the trading environment itself: the higher the fraction of global trading that takes place in the new market, the greater its contribution to price discovery. However, there is still an open question as to the causality of that relationship and whether it is just a transitory effect around the listing or more permanent. Firm-specific factors related to the information environment of the firm, such as its size, ownership structure, analyst coverage, as well as country-level factors, such as market-wide and exchange-rate volatility, investment restrictions and gross and net transactions costs, impact multi-market trading, liquidity and the joint dynamics of stock returns in the competing markets.

D. The Role of the Capital Markets

Fanto and Karmel (1997) surveyed managers of a number of companies that had listed ADRs in the U.S. and reported that managers cited increased access to new capital as one of the most important motivations for pursuing overseas listings. A number of studies have suggested that firms that list in the U.S. gain value because they bypass local underdeveloped capital markets. Hence, it is the greater

liquidity and efficiency of the U.S. market for capital that makes a listing valuable for those firms that need to raise funds. A special perspective on the importance of capital-raising activity among the cross-listed firms is important because it can help us to understand why the economic magnitude of the capital market reactions to cross-listings is so small. After all, the cost-of-capital effect stemming from a global diversification of corporate risk exposures associated with a cross-listing in the U.S. is unlikely to be realized until the firm actually draws from the newly accessible capital market.

An understanding of the role of global capital markets as a monitoring device for potential agency problems of firms that cross-list shares overseas is also important as it represents an integral part of Stulz's (1999) critique. In fact, three of his six monitoring mechanisms are related to capital market intermediaries: (1) investment bankers as a certification device among those cross-listing firms that raise capital through global equity offerings, (2) active shareholders, including institutional investors, as "outside" monitors with sufficient resources to be effective, and (3) the market for corporate control, especially acquisitions or leveraged buy-outs, as a back-stop for failures of internal governance systems. I focus, in turn, on research that has shed light on the importance of each of these monitoring mechanisms.

(1) Investment Bankers in Global Equity Offerings as Monitors

To sell securities, managers hire investment bankers who play a certification role by risking their reputations in marketing the securities to their investor clients. When raising capital in global markets, companies from less-developed markets gain access to a broader range of investment banks. As long as they have good prospects, they can choose to issue securities with banks that have stronger reputations in global equity markets rather than just those that specialize at home. Securing the help of such banks potentially conveys positive information to the markets about the companies themselves.

Two parallel studies on global equity offerings (GEOs) completed by Chaplinsky and Ramchand (2000) and Foerster and Karolyi (2000) evaluated this question from two different perspectives. The former examined the benefits and costs of GEOs by U.S. firms that distributed at least a tranche of shares outside of the U.S. while the latter focused on non-U.S. companies from all over the world that included an ADR tranche in their offering. Both studies were motivated in part by the vast literature on short-run

underpricing and long-run underperformance following domestic initial and seasoned offerings (Ritter, 1991; Spiess and Affleck-Graves, 1995; Loughran and Ritter, 1995) and, in part yet again, because of the unique feature that equity capital is raised in multiple markets simultaneously. For example, Chaplinsky and Ramchand hypothesize a higher initial offering price (lower short-run underpricing) in such circumstances because of diminished inelasticity (downward sloping) of demand curves for shares due to easing of market imperfections (taxes, transactions costs, information costs). Foerster and Karolyi (2000) focus explicitly on the dichotomy of public exchange-listed issues (Level 3 ADR programs) versus SEC Rule 144a private placements and potential differences in their long-run underperformance. Though both kinds of offerings are underwritten by investment bankers, public offerings are a tougher test of an investment bankers' reputation as they are typically larger, require more information disclosures and are sold prospectively not only to institutions but also retail investors.

Chaplinsky and Ramchand (2000) study 438 firm-commitment GEOs by U.S. industrial firms between 1986 and 1995. They benchmark the analysis with a control sample of domestic issues and find that the negative stock price reaction that typically accompanies these offerings is reduced by 0.8 percent when shares are sold into multiple markets. They show that the positive price effect could be offset in part by higher issue costs. Foerster and Karolyi (2000) study 333 GEOs with ADR tranches from 35 countries in Asia, Latin America and Europe between 1982 and 1996. They show that GEOs underperform local market benchmarks of comparable firms by 8 to 15 percent over three years following issuance, a result that is not different than purely-domestic equity offerings. However, the companies from developed markets are shown to be the primary drivers of underperformance, especially those that raise capital by way of SEC Rule 144a private placements. They interpret this new result as inconsistent with the market segmentation hypothesis and propose hypotheses about the information environment of the firm, along the lines of Merton's (1987) market incompleteness, the idea of which was originally advocated in their earlier study (Foerster and Karolyi, 1999). Although they suggest no causality, the post-issuance

performance of the public issues is positively associated with turnover activity in the ADR market, which suggests that increased potential liquidity of the U.S markets is a factor.[23]

Bruner, Chaplinsky and Ramchand (2000) provide a clinical study of 31 IPOs of non-U.S. firms in the U.S. using ADR programs focusing explicitly on the role of investment bankers. They complement traditional empirical findings of short run underpricing and long-run underperformance with information from interviews with investment bankers themselves. Their principal findings were that these firms were larger, more mature with significant dominant positions at home, that the underwriters were unusually concentrated in a select group of firms, and that the most important feature of the IPO "road show" process was the goal of enhancing transparency, the quality of financial reporting and the respect for shareholder rights. As expected, the U.S. equity offerings by foreign firms are significantly underpriced with an average first-day return of 12.7% (Burch and Fauver, 2003). Interestingly, Burch and Fauver also show that the extent of underpricing is also related to the scope of foreign ownership restrictions in the home country of the 50 firms that raised capital between 1989 and 2001: firms with restrictions experience much larger first-day returns.

(2) New Large, Active Shareholders as Monitors

One of the primary goals of an overseas cross-listing is to broaden the shareownership base of the firm. To the extent that a new complement of shareholders is comprised of large, foreign institutions, it is much more likely that costly monitoring takes place and that it is performed an arm's-length distance so that it ends up increasing firm value and benefiting minority shareholders, in general. This is an important component of the Stulz (1999) critique, but its testability has been hampered by the fact that timely and accurate information on the ownership structure of these cross-listing firms is still difficult to obtain before the capital-raising event let alone afterward. Several recent articles have addressed this

[23] Other evidence of the favorable effects of global equity offerings are found in Errunza and Miller (2003). They examine short-run capital market reactions to 123 seasoned global equity offerings *after* the initial U.S. listing and find that they avoid the negative returns associated with matched purely-domestic offerings. Interestingly, Pinegar and Ravichandran (2002) show favorable short-run reactions even to Rule 144a private placements at least for a sample of 126 Indian firms in the 1990s. In this case, enhanced liquidity is not a factor, so they argue that information asymmetries are resolved between global investors and Indian firms via these transactions.

deficiency in the literature with descriptive statistics from interesting ownership databases, but the primary question of monitoring effectiveness is still mostly unanswered.

One team of researchers at the Federal Reserve Board of Governors (Edison and Warnock, 2004; Ahearne, Griever and Warnock, 2004; and, Ammer, Holland, Smith and Warnock, 2004) exploits proprietary survey data on security-level holdings of non-U.S. equities by U.S. investors obtained from mandatory reports from U.S. custodians and institutional investors in 1994 and 1997. They investigate different questions. For the Edison and Warnock study, their security-level analysis documents that emerging market firms that have cross-listed on U.S. exchanges are held in proportion to their relative market value (float-adjusted) outstanding, as predicted by the international capital asset pricing model and this is not the case for purely-domestic emerging market firms. The authors primary goal is to document this fact, but they suggest that what they uncover may arise from differences in the information asymmetries for U.S. listed and domestic firms and offer these as the primary factors in the "home bias" phenomenon observed around the world. Ahearne et al. document the same kind of increase at the country level in U.S. holdings of foreign equities for those countries that have a higher fraction of their shares cross-listing in the U.S. The Ammer et al. study specifically documents the economic importance of this phenomenon in computing that U.S. investors hold 17% of the outstanding shares of the average cross-listed firm, 14 percentage points higher than that of the average foreign firm that is not cross-listed.

But, U.S. institutional and retail investors do not favor all cross-listed shares equally. Aggarwal, Dahiya and Klapper (2004) investigate detailed ADR and domestic ordinary share holdings by 111 U.S. mutual funds in the Morningstar universe. They confirm that ADRs are strongly preferred to ordinaries, but especially for those issues from countries with poor investor protections, low liquidity, high transactions costs and if the firm has a small or limited analyst following in the home market. Leuz, Lins and Warnock (2005) extend this line of inquiry one step further by showing that the "cross-listing effect" in U.S. holdings is also sensitive to the governance of the firms following the theme of the "bonding" literature described above. That is, even cross-listed firms can suffer from the mitigating impact of poor

expected governance due to a threat of expropriation by controlling shareholders, which they measure by the fraction of shares held by managers and their families.

(3) The Market for Corporate Control as Monitor

Finally, an interesting new hypothesis for cross-listings links the growing importance of global equity offerings to increased cross-border merger and acquisition activity. The takeover market is an important monitoring mechanism when internal governance systems fail. Takeovers are effectively, if not legally, prohibited in many countries around the world. The act of cross-listing shares in countries in which there exists a vital and active takeover market offers a new possibility for investors to remove underperforming managers. This leads to greater competition for control among investors which benefits existing public shareholders directly.

Kumar and Ramchand (2005) develop a stylized model of dominant controlling shareholders seeking to curtail moral hazard problems associated with private benefits of control. The idea is that dominant shareholders observe growth opportunities (or synergies) through acquisitions of foreign (namely, U.S.) targets. The cross-listings effectively reduce the transactions costs of stock-financed acquisitions of the foreign target, but not through any special legal- or regulatory-related benefits to the foreign, public shareholders. Rather, it is the control and ownership dilution through the global offering following the cross-listing that alleviates the agency costs. They test and find supportive evidence for this *market-based* rather than *institutional* ("bonding") incentive to reduce agency costs: the likelihood of a U.S. acquisition within three years following a U.S. listing is greater for firms which (a) undergo a secondary equity offering, (b) experience larger reductions in cash-flow or control rights through that offering, (c) initiate other governance-improving actions, and (d) achieve stronger valuations (Tobin's *q*) before and after the listing and offering.

Empirical studies by Burns (2004) and Tolmunen and Torstila (2005) of cross-listings creating an "acquisition currency" for non-U.S. acquirors of U.S. targets support elements of this theory. The Burns study showed that cross-listed foreign bidders for U.S. targets are significantly more likely to engage in an acquisition than non-cross-listed foreign bidders and they are much more likely to finance the

acquisition with equity. Moreover, the acquisition premiums are 10 percent lower than non-cross-listed firms paying with cash (though they are higher than that of a comparable set of U.S. acquirors of U.S. targets). Tolmunen and Torstila focus on an exclusively European sample (196 firms from 1996 to 2000) that cross-listed in the U.S. Like Burns, they find that proportion of acquisition activity that is equity-financed is greater after a U.S. cross-listing, but, unlike Burns, they find that the likelihood of initiating an acquisition in the first place is no different before or after the cross-listing.

What do we learn?

Increased access to capital in new markets is an important motivation for firms in pursuing international cross-listings. Success, however, may be predicated on the role that various agents that facilitate access to the capital markets play. One an important role they play is in monitoring the firms on behalf of public investors to help mitigate against potential agency conflicts and information problems. Research has focused on the certification role of investment bankers who stake their reputations in marketing the securities of these newly-listed firms to their investor clients. Global equity offerings sold publicly through investment banks in the U.S. realize smaller first-day returns and, though they realize significantly negative long-run returns, these reactions are still smaller than those sold as Rule 144a private placements. Large institutional investors, which can also serve an effective monitoring role, are significantly more likely to invest in non-U.S. equities that cross-list as ADRs. Finally, a more active takeover market – which can act as an external monitoring device for poor performing managers - develops for non-U.S. firms that cross-list their shares in the U.S. with a higher likelihood of initiating a bid or becoming a target, a greater likelihood of financing the acquisition with equity and lower bid premiums when targeting U.S. firms.

E. Real Effects of Cross-Listings

With the growth in the number of international cross-listings over the past decade and with the size, importance and public profile of the firms that choose to pursue listings from a country, a number of researchers have asked whether there are real benefits or costs to other firms from that same country or to the vitality of the local capital markets and local economies, as a whole. Two competing testable hypotheses are offered for these real effects of international cross-listings. The first hypothesis views the growth of cross-listings from a country as an important market liberalization event representing a catalyst for the integration with global markets and thereby spurring economic development and growth. The firms that list on overseas markets attract the attention of global investors and bring greater visibility, credibility and enhanced liquidity to the other stocks trading on local markets. Local financial

intermediaries, like market makers, perceive of the competitive threat of global markets and they respond by improving the efficiency of trading systems and by pushing for economic reforms for greater transparency and tighter disclosure requirements. The alternative hypothesis outlines a scenario in which international cross-listings represent a diversion of investment flows and trading activity away from local markets which, in turn, leads to an overall deterioration of the quality of local markets. Beyond those select high profile stocks that are able to access global markets, the market for other domestic stocks becomes more fragmented or segmented from global markets.[24] Stulz (1999) extends this alternative hypothesis further by arguing that the firms that cross-list effectively identify those that do not as "losers" as they are *de facto* refusing to bond to global capital markets or to provide full information disclosure. While the literature in this stream is still at an early stage, debates have already begun on the viability of the two alternative hypotheses.

Hargis and Ramanlal (1998) were the first to develop a model of the impact of international cross-listing on domestic market liquidity and trading volume to determine when domestic market development is likely to follow. Their conclusion is similar to that of Domowitz, Glen and Madhavan (1997) in that market development depends critically on greater information transparency between markets. Listings from larger, more transparent markets, from smaller less liquid markets with greater foreign ownership restrictions should show the greatest improvement in domestic market quality. They also show that the potential to increase shareholder base is an important factor for market development, which is consistent with the empirical evidence in Foerster and Karolyi (1999).

Moel (2001) examines the effects of ADR growth for three different proxies of stock market development (market openness, liquidity and the growth in domestic listings) in 28 emerging markets. The development measures are computed annually, as are the ADR market growth proxies. Unfortunately, his results are mixed. He finds that ADR expansion negatively affects investability,

[24] Some have referred to this debate as one over the "epiphenomenon" of international cross-listings. That is, what interests researchers is not so much the deliberations over the benefits and costs of cross-listings per se, but the importance of a "secondary" phenomenon of what the growth and expansion of cross-listing activity implies about real economic development.

liquidity and growth in domestic listings. His results are concentrated in African and Latin American markets and in countries in which the ADRs attract the most trading activity in the U.S.

Karolyi (2004) also evaluates a broad array of measures of stock market development and market integration, including the ratio of market capitalization to GDP, the number of public companies, overall cross-border equity flows, and trading activity. These measures are constructed monthly from the Emerging Market Database for 12 countries from Asia and Latin America. Unlike Moel, however, Karolyi constructs these measures from firm-level data and separately for ADR firms and non-ADR firms which allows him to isolate the direct effects of the cross-border listings for ADR firms themselves and the indirect effects on the other non-ADRs. The results are consistent across all development proxies. Overall, market capitalization to GDP, the number of listings, equity flows and trading activity are all significantly higher with the expanded market for cross-listings, but all of these benefits stem from the ADR firms themselves. In fact, the quality of the domestic market for non-ADRs in these emerging countries is significantly eroded. The results are robust to a number of controls including official liberalizations, other capital market events (like country-fund introductions) and even the influence of events like the Asian financial crisis.

These adverse spillover effects are evident in other studies. Levine and Schmukler (2003) examine a broader sample of 55 countries to show that the migration of trading of "international firms" (which include not only ADRs but also firms that issue equity or debt overseas) to major exchanges has led to a significant diversion of trading away from domestic firms into international firms on local markets. Claessens, Klingebiel and Schmukler (2002) aggregate the Levine and Schmukler analysis to the country level and show that the diversion of activity is concentrated in those countries with lowest incomes per capital, less efficient legal systems and less liquid markets in the first place. Edison and Warnock (2003) even show that though cross-border listings lead to large and significant increases in net equity flows to emerging markets, these events are transitory.

Three new studies have increased the frequency of the analysis of spillover effects. They focus on the days around ADR listing announcements in the U.S. for firms from emerging markets and measure

the capital market reactions to non-ADR "rival" or "competitor" firms. Two of the studies by Fernandes (2003) and Melvin and Valero-Tonone (2003) use this alternative perspective to test the adverse spillover hypothesis directly; Lee (2003), interestingly, proposes this study as a means to distinguish the market segmentation and legal bonding hypotheses. He argues that the positive share price reaction to listing firms can be associated with a positive reaction by rival firms if it is seen by investors as a market liberalizing event that allows risks to be more easily spread among global investors. A negative reaction by rival firms can arise, however, if investors perceive of their non-listing decision as a signal that the controlling shareholders fear U.S. securities laws and incremental disclosures as they do not want to limit their expropriation of private benefits of control (Coffee, 1999, 2002; Stulz, 1999).

The results are surprisingly mixed across these studies. Lee documents a negative abnormal return, on average, for 3,571 competitors of the 69 ADR-listing firms. The negative returns are concentrated in those firms that have the highest returns correlations with the listing firms and in those with the higher agency costs of controlling shareholders, which he proxies by the Tobin's q ratio. Fernandes (2003) finds a positive impact of the first ADR listing from each country on rival firms. He focuses on the first listing as this is likely to be associated with the greatest liberalizing effect. His analysis employs monthly returns and he finds that the positive "spillover" effect is strongest for those stocks with the highest returns correlations with the listing firms. The effects are measured not only in terms of stock returns, but also with changes in local (decrease) and world (increase) market betas and overall volatility (decrease). Finally, Melvin and Valero-Tonone find a negative 3.05 percent cumulative average abnormal return for the 65 rival firms in the three days around announcement (like Lee) and listing dates. They employ a matched-sample benchmarking procedure based on size and industry in the home country. They also show that the effects are stronger for the rival firms with the most highly correlated returns to the listing firms and that the results are stronger for emerging markets. They interpret the findings as a negative signal for the rivals who are less transparent and less informative relative to the listing firms.

The spillover debate in these studies seeks to understand the real consequences of cross-listing events or overseas listing activity in aggregate to the extent that the competitive positions of other firms (within the same country or industry) are affected. But the focus is almost always on what happens to the equity trading environment (stock returns, trading volume) for those firms, and not on the current and future operating performance of the listing firms and their competitors, much less aggregate economic growth, as a whole. A few exceptions exist. Lins, Strickland and Zenner (2004) demonstrate that firms that list in the U.S. become less credit-constrained as a result of doing so in that their investments depend less on their cash flows after the U.S. listing. Their analysis included 81 developed market and 105 emerging market firms over 1980 to 1996. To examine the change in the sensitivity of investment to free cash flow, they used the Fazzari, Hubbard and Peterson (1989) methodology in regressing quarterly investment-to-total-assets ratios on free-cash-flow-to-total-assets with market-to-book as a control and with interactions for quarters after the U.S. listing. They show that this sensitivity coefficient declines by 30 percent and that this effect is concentrated in listings from emerging economies and those with below median scores for legal protection (using the index in La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1998).

A second exception is a new paper by Christou, Louca and Pavlou (2005) in which they compare the profitability of 287 non-U.S. firms before and after they cross-listed in the U.S. during the 1990s. Using five different measures of profitability, including net income, operating income with depreciation, and capital expenditures with research and development (all deflated by total assets), the authors show increases of 10 to 30 percent from three years' prior to three years following the listing. They also show that these increases in future operating performance are significantly related to the market adjusted returns during the period one year prior to the listing, suggesting that the market is aware of the investment potential of these cross-listing firms. They control for a variety of firm-specific, issue-specific and country-level factors and show that the results are concentrated among cross-listing firms that raise capital at the same time.

What do we learn?

If globalization expands a firm's opportunity set by widening the capital base it can access or by facilitating improvements in governance systems to lower its capital costs, the firm should realize gains not only in its capital market environment (greater liquidity, more analyst coverage, broader share ownership, higher valuations), but also in its investment and operating performance. There could also be real consequences – both positive and negative - for the other firms competing with those pursuing overseas cross-listings and for the overall economy in which these firms are domiciled. Only preliminary evidence exists to date. The investment and operating performance of those firms cross-listing on overseas markets do improve in a way that is consistent with favorable capital market reactions to these events, but whether these improvements are transitory or permanent are not known. There is mixed evidence on the consequences of these cross-listing events for competitor firms, but most of these studies focus only on the stock returns and trading volume of firms in the same home market or industry. Aggregate cross-listing activity does spur on cross-border portfolio investment activity, but there is some evidence of an adverse impact on overall trading activity, especially in emerging markets.

5. Unanswered Questions

As more foreign countries develop their economies and global competition escalates, the mutual needs of governments and corporations to locate new sources of capital and of global investors to capitalize on overseas opportunities continue to be met through the growth and expansion of international cross-listings around the world. While it is true that cross-listings are not the only strategic vehicle available for global investing, they have certainly played an important role in facilitating cross-border capital flows. Government officials, market regulators, corporate CFOs, fund managers and retail investors interested in this investment vehicle had really been unable to access reliable information about its potential economic impact until the huge growth in academic research that occurred in the past decade.

Early on in the development phase of this literature, researchers practically "codified" the market segmentation theory into a "law of nature." This theory rationalized the cross-listing decision of the firm as one that trades off the benefits of accessing new global investors who would otherwise find it infeasible to hold the shares because of the segmenting effect of investment barriers with the costs of a new exchange listing, of harmonizing financial statements with global accounting standards, of soliciting legal advice for compliance with reporting and registration, and many others. Problems for the theory began to arise when the first limited, though affirming, empirical evidence was not validated as the market for cross-listings expanded through the 1990s and then contracted during 1998-2004. The goal of

this survey has been to highlight the deficiencies of the market segmentation theory and the early empirical evidence in support of it and to showcase several new research initiatives launched by a wide variety of scholars to address them.

The five new research initiatives that I have outlined in Section 4 demonstrate a diversity of scholarship that has greatly enriched the kinds of questions being asked and answered. But, there is also a unifying theme in these various initiatives in that they emphasize the growing importance of corporate governance issues in the cross-listing decision. I give credit to the seminal contribution by Stulz (1999) for laying the groundwork. He emphasized the potential agency conflicts and information-asymmetry problems corporate managers or controlling shareholders would face with public shareholders in their effort to raise capital external to the firm. The agency conflicts could arise over managers' or controlling shareholders' consumption of private benefits or any actions taken that are not aligned with their interests of public shareholders. Information problems might stem from the fact that, though management has good information about the projected cash flows that can materialize for the firm, it cannot credibly convince investors. Strategically pursuing cross-listings in certain overseas markets can help managers and controlling shareholders to mitigate information problems if these markets require stricter, and ongoing disclosures and to improve governance systems lowering agency costs and enhancing the value of the firm for them and the public shareholders.

Stulz (1999) delineates several specific mechanisms that alleviate these problems by serving as monitors of management and controlling shareholders of these cross-listing firms. He includes monitoring by the legal system and its enforcement of minority-investor protections, boards of directors as internal monitors, capital markets agents (such as investment bankers, active shareholders) who invest in costly monitoring in their own interests, the regulatory authorities that mandate continuous public disclosure of financial statement information, and, finally, the market for corporate control in disciplining managers that underperform when internal governance systems fail.

What do we know about the effectiveness of these various monitoring mechanisms? Legal systems do seem to matter for understanding the world of cross-listings. Companies from around the

world with weaker home-country legal protections for public investors tend to cross-list less frequently in countries with stronger legal protections. Those that do so are typically faster growing and need new capital and, most importantly, are rewarded with significant valuation premiums once they do. How large these premiums are and whether they are transitory or permanent are still open questions. Capital-markets-based accounting scholars have long emphasized the significant economic consequences of changes in information disclosures by firms, particularly those mandated and monitored by regulatory authorities, like the SEC in the U.S. Researchers on accounting systems in international capital markets have argued that valuation changes around cross-listings may have less to do with barriers to investments and more to do with changes in reporting and disclosure requirements necessary to support a listing in the new market. Complexities do arise in such experiments because these newly-listed firms seem to exercise considerable discretion in their disclosure activity and other factors, such as culture, language and even geography, can impact the information environment.

Experts in the study of market microstructure have focused on whether firms choose to cross-list their shares overseas to achieve a more liquid trading environment for their shares and whether this can explain the valuation effects associated with listings. While this question is still an open one, scholars have developed close to a consensus that the competition for order flow from the multiple markets trading the shares does affect how information is impounded into prices. Specifically, price determination seems to occur primarily in that market which attracts most of the order flow, regardless of whether that is the domestic market or the new market. Why and how that order flow naturally gravitates to one market or the other and how this changes over time is still not clear, however.

Actions of agents of the capital markets, including investment bankers and large institutional investors have an impact on the valuation of cross-listing firms. Those among cross-listed firms that seek out investment bankers to help sell securities publicly to their investor clients achieve first-day returns around initial and secondary global equity offerings that are significantly lower than domestic firms that raise capital only in their home markets. The long-run underperformance following such offerings, while still significantly negative as are domestic equity offerings, are considerably smaller than those of private

placement issues, which do not rely so heavily on the certification role that investment bankers play before public investors. At least in the U.S., we also know that institutional investors actively invest in non-U.S. firms that cross-list their shares via ordinary listings or ADRs. Research has also uncovered a significantly more active market for corporate control among firms that cross-list shares on overseas markets. The likelihood of initiating an acquisition or becoming a target is significantly higher and the premiums paid by bidders with cross-listed shares for local targets are lower than those with no such capital-market presence.

Finally, economists have sought to broaden further the implications of the *collective* decision of so many stocks to cross-list for the industries and the countries to which they belong. The market for international cross-listings, after all, has been the domain of the largest and high-profile global firms and it has expanded to represent a large fraction of the market capitalization of the host markets as well as the home markets. Scholars have asked whether there are important real benefits or costs not only to the cross-listing firms but also to other firms from that same country or industry or to the overall vitality of the local capital markets or real economies, as a whole. This literature is still at an early stage. There is evidence that the investment and operating performance of the cross-listing firms accord with their positive capital-market performances. But, both positive and negative spillover effects on competitor firms seem to arise.

What questions remain open? I offer several avenues for researchers to explore further, some of which relate substantively to the issues outlined above, others relate to data or methodology constraints which plague current studies. I describe these in no particular order of importance. First, research has relied very extensively, though thankfully not exclusively, on the experience of the 1990s and especially on the rapid expansion of international cross-listings by non-U.S. firms on U.S. exchanges to gain our inferences about the process. The challenge of broadening its reach stems too often from data limitations in other markets around the world. The early efforts do show considerable promise in that they are uncovering forces at work related to culture, geography and investor familiarity of which we were

previously unaware (Pagano, Randl, Roell and Zechner, 2001; Pagano, Roell and Zechner 2002; Sarkissian and Schill, 2004).

Regime shifts create new research opportunities. The Sarbanes-Oxley (SOX) Act of 2002 was signed by President Bush on July 30, 2002 and it introduced a number of provisions to improve corporate governance practices of publicly-listed companies in the U.S. As the legislative process leading to its adoption was concluding, it was realized that the language used in the new law would cause it to apply to forieng firms with U.S.-listed securities. Some suggest this action was inadvertent (Perino, 2003). It has nevertheless drawn out strong and vocal opposition, especially among European issuers, because of the significant costs of SOX compliance, redundancies with home-market requirements and the difficulties of terminating reporting obligations.[25] The SEC has deferred consideration of these issues until 2006 for foreign private issuers. However, there is too little research to guide their decisions (an important exception exists in Berger, Li and Wong, 2005). How has this exogenous change in investor protections affected shareholder wealth of these U.S. listed firms? Have the monitoring incentives of institutional blockholders and sell-side analysts changed as a result of SOX? Has the role of internal monitors in the boards of directors of these companies changed? Has their composition changed in anticipation?

To better understand how capital markets monitor the management and inside blockholders of a cross-listing firm, higher quality and higher frequency data on the composition of the share ownership base and how it changes over time is critical. To what extent does the fraction of shares held by institutions or closely held by corporate insiders influence the valuation of these cross-listing firms relative to others? Are they more likely to raise equity or debt capital via a global offering and will the short-run or long-run returns behave differently as a result? An important challenge for researchers who seek to gauge the economic vitality of cross-listing programs is the poor quality of data on the fraction of shares that are held in one market or another. ADRs are uniquely interesting as they are created and cancelled daily and the depositary banks track these transactions carefully. It would be very useful to link

[25] See February 9, 2004 open letter to then SEC Chairman William Donaldson signed by the Alain Joly, President of the European Associal for Listed Companies (EALIC) and several other business associations.

the long-run share price performance following a global offering to the rate and pace with which ordinary shares "flow-forward" into more ADRs or ADRs "flow-back" into ordinaries, as the latter accurately reflects fluctuations in U.S. investor demand for those shares.

To fully understand the economic consequences of changes in the disclosure requirements for firms listing shares on overseas exchanges, research needs to concentrate more efforts on the role that informational intermediaries play. There has been some useful initial work on security analysts and their earnings forecasts around the listing decisions themselves (Lang, Lins and Miller, 2003, 2004; Bailey, Karolyi and Salva, 2005). Unfortunately, we know little about the composition of the analysts, whether they are local or based in the new market, and whether this affects the dispersion or accuracy of their forecasts or the capital market participant's reactions to their forecast skills. How are the activities of analysts affected by changes with the capital market environment? Is analyst coverage related to the "seasoning" process in the U.S. as other researchers have uncovered for IPOs in the U.S. (Rajan and Servaes, 1997)? We also know remarkably little about the role that investment bankers play in these markets. Their certification of foreign issuers stems from their reputations, which, in turn, stem from their market share in the global equity offerings market. But, do their reputations impact at all the terms and conditions of subsequent capital-raising events?

Study of the impact of cross-listings on the liquidity of the trading environment and on the price discovery process in a multiple-market setting will continue to be hampered by the lack of quality transactions and quote data for a comprehensive sample of non-U.S. markets around the world. The early findings in studies by Hedvall, Liljeblom and Nummelin (1998), Pascual, Pascual-Fuster and Climent (2001), Menkveld, Koopman and Lucas (2003), Phylaktis and Korczak (2005) and Grammig, Melvin and Schlag (2004, 2005) are certainly promising first steps toward this end. The growing breadth of analysis across markets around the world should be very helpful in uncovering where the markets are deepest and where price discovery actually originates. We may, in fact, learn that price discovery does not necessarily originate in the markets with the highest relative turnover, but rather where the informed traders are going with limited market impact. Ellul (2005), in fact, has shown that market-makers in French, German and

Italian cross-quoted stocks tend to split their orders across European markets and, more often than not, tend to execute their largest orders (most informed, perhaps) on the London Stock Exchange's SEAQ-I market even though overall turnover for these stocks is higher in their home markets.

Finally, while international cross-listings have come of age with record-breaking highs in trading value, capital raised and the number of new programs, we, as researchers, still have only preliminary understanding of the real economic consequences of their growth. We know that cross-listings are important catalysts for cross-border capital flows and that capital flows are positively linked to financial market liberalizations, which are, in turn, associated with higher real per capita growth (Bekaert, Harvey and Lundblad, 2001; Bekaert, Harvey and Lumsdaine, 2002). The market liberalization has taught us to think about it as a long-term secular force rather than a one-time event. One interesting question then is whether there is some logical path dependence in the cross-listings process across firms and across time. It may be that the first several overseas listings from a country do play a role in circumventing investment barriers in a way consistent with what theories about market segmentation would predict. But, if these cross-listings take place after many others have gone before and after the country itself has conducted formal regulatory liberalizations, these cross-listings may come to signify more a corporate decision than as part of a liberalization process. Lee (2003) offers some preliminary support of this view. These, however, are just a few partial equilibrium results that belie the complexity of economic systems and make us wonder just how important financial innovations, like international cross-listings, really are.

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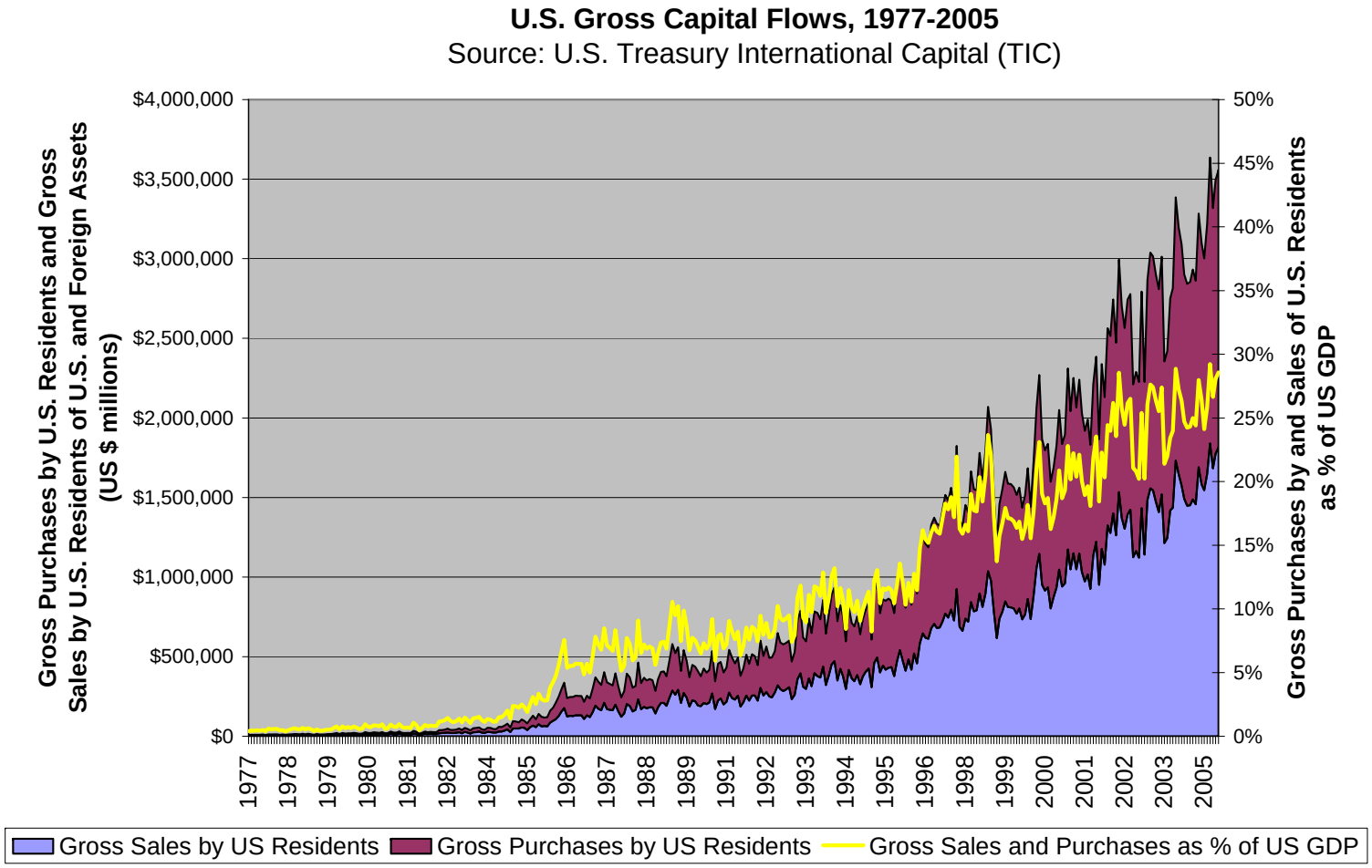
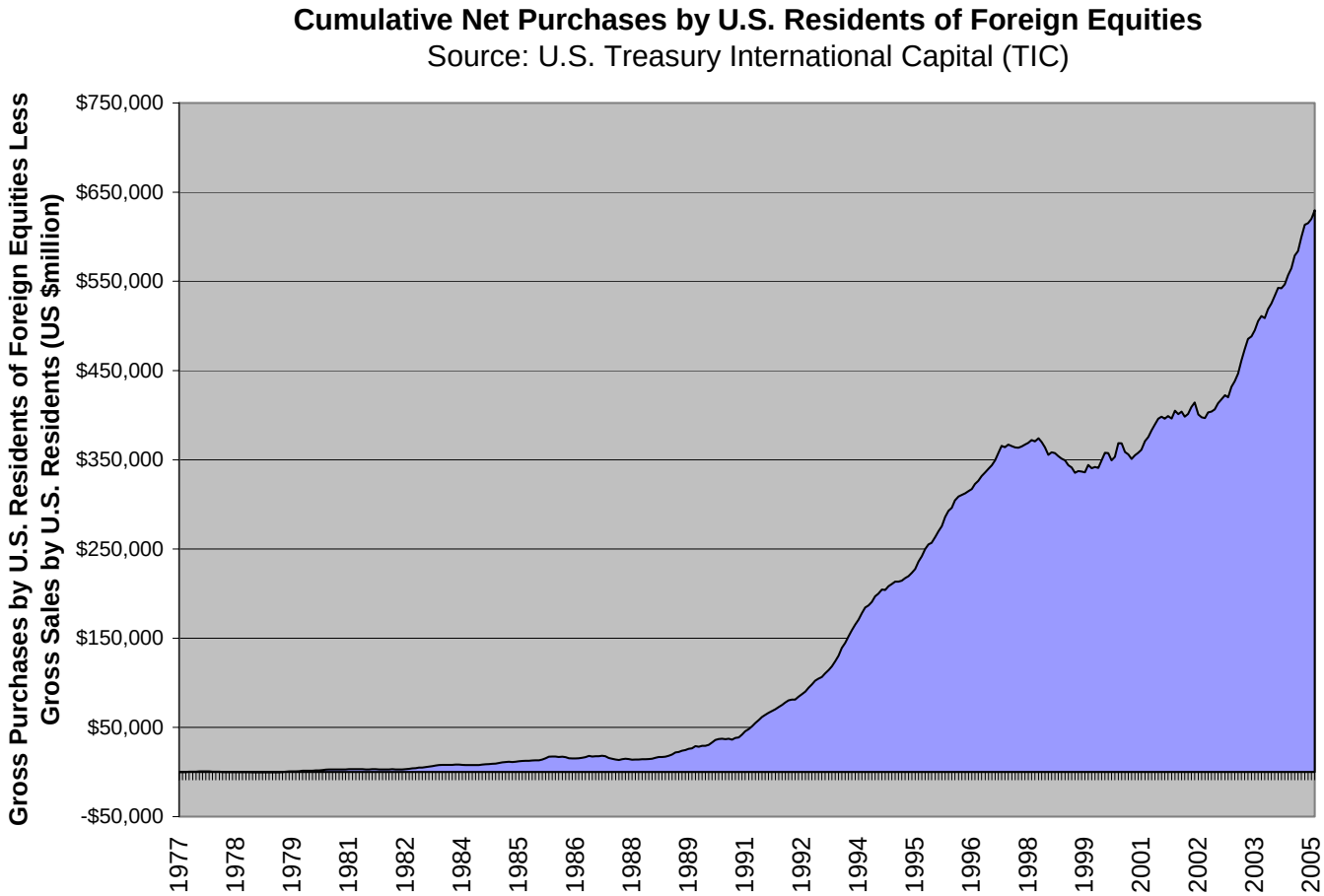
Figure 1



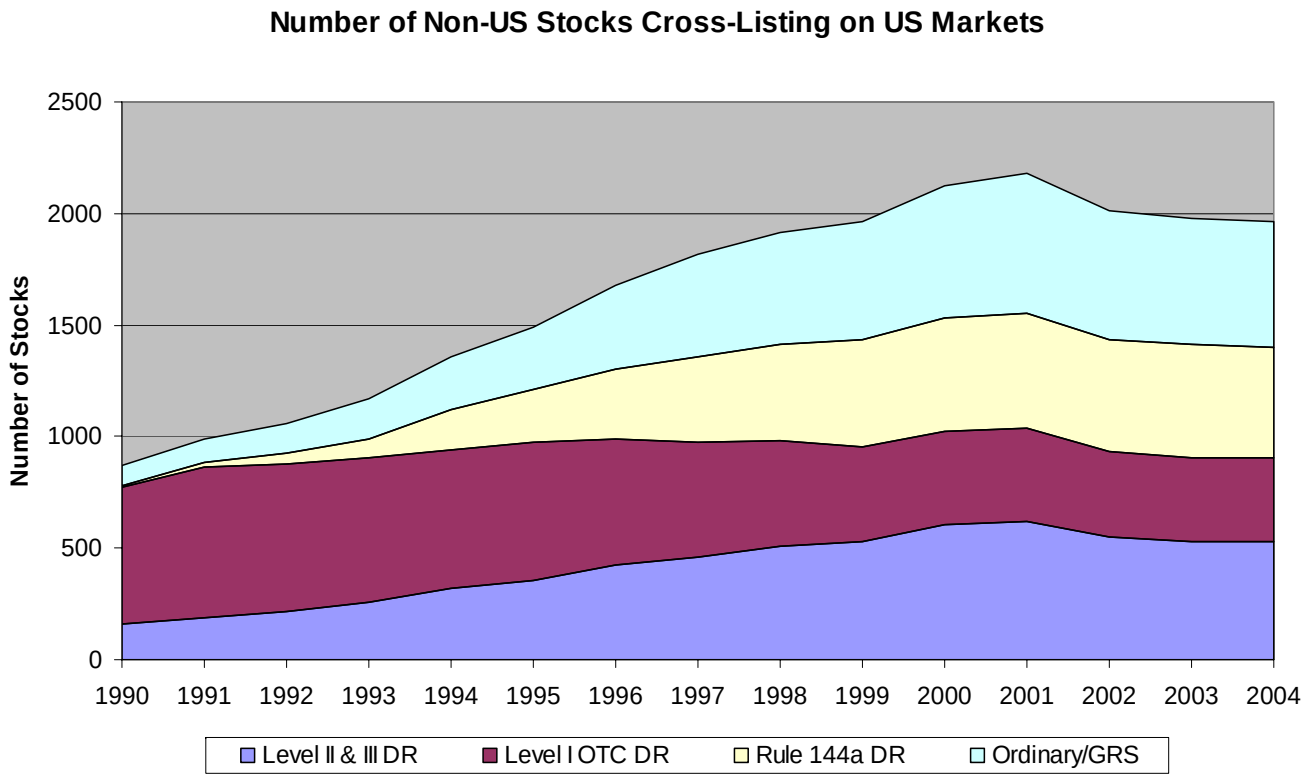
Source: U.S. Treasury International Capital (TIC), 2005

Figure 2



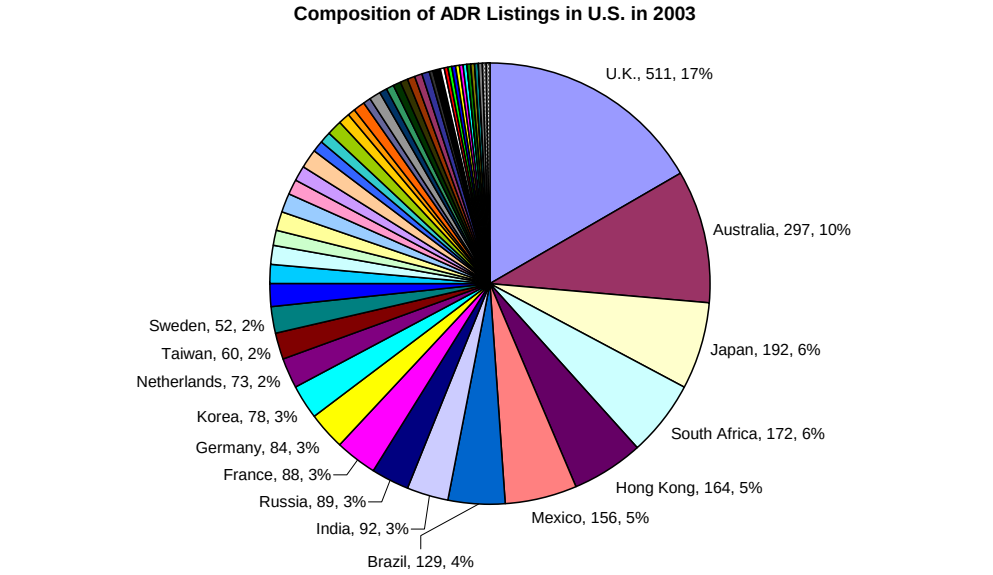
Source: U.S. Treasury International Capital (TIC), 2005

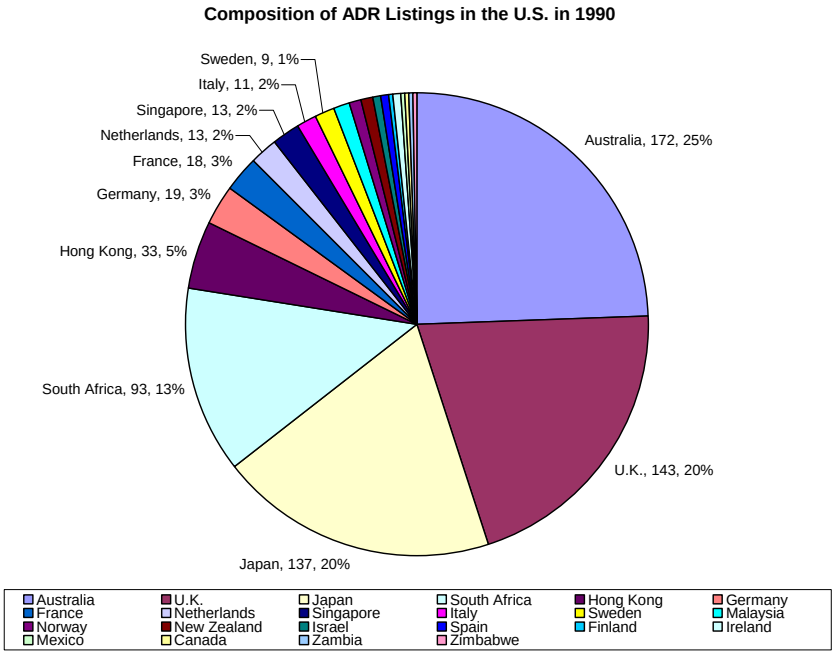
Figure 3



Source: Bank of New York; New York Stock Exchange; Nasdaq; Toronto Stock Exchange, OTC Bulletin Board.

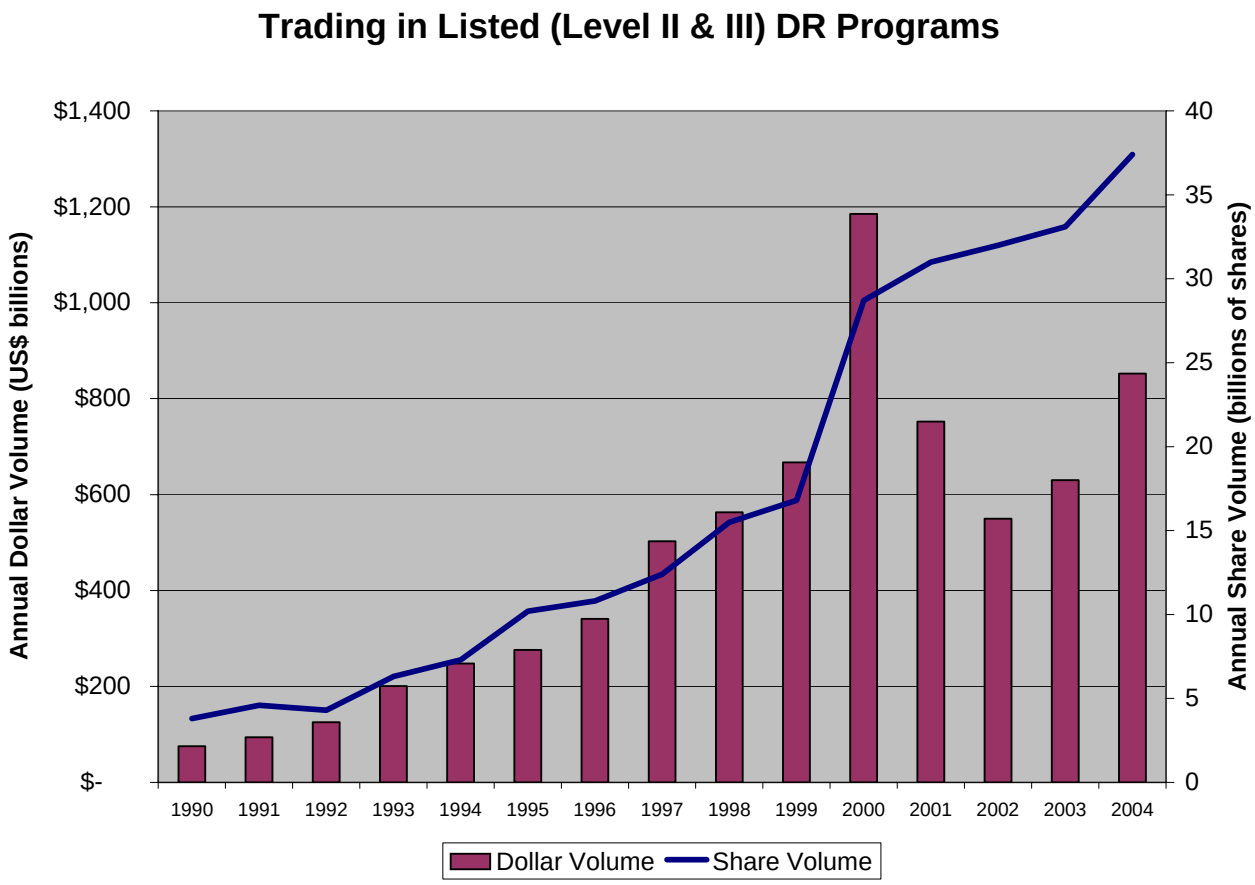
Figure 4





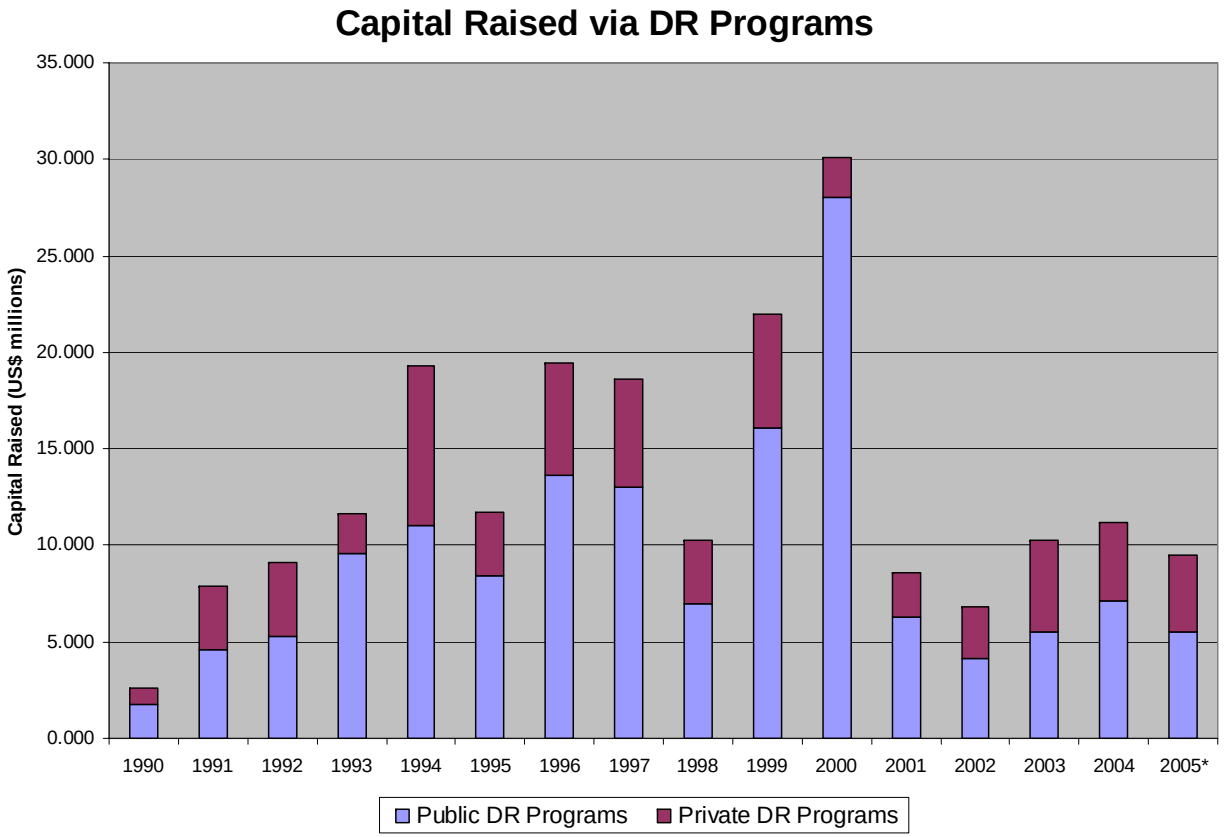
Source: Citibank Universal Issuance Guide, 2004.

Figure 5



Source: Bank of New York, 2005.

Figure 6



Source: Bank of New York, 2005.

Table 1 - Total Number of Domestic and Foreign Listings on Major Stock Exchanges

Exchange	2004 Total	2004 Domestic Cies	2004 Foreign Cies	2004 Foreign %	1999 Total	1999 Domestic Cies	1999 Foreign Cies	1999 Foreign %	1995 Total	1995 Domestic Cies	1995 Foreign Cies	1995 Foreign %
The Americas												
Mexico	326	151	175	53.68%	190	186	4	2.11%	185	185	0	
Nasdaq	3,229	2,889	340	10.53%	4,829	4,400	429	8.88%	5,127	4,766	361	7.04%
NYSE	2,293	1,834	459	20.02%	3,025	2,619	406	13.42%	2,242	1,996	246	10.97%
Toronto	3,604	3,572	32	0.89%	1,456	1,409	47	3.23%	1,258	1,196	62	4.93%
Buenos Aires	107	103	4	3.74%	125	124	1	0.80%	149	149	0	
Santiago	240	239	1	0.42%	282	282	0		282	282	0	
Sao Paulo	388	386	2	0.52%	487	486	1	0.21%	544	543	1	0.18%
Europe, Africa, Middle East												
Amsterdam					387	233	154	39.79%	346	184	162	46.82%
Brussels					268	146	122	45.52%	279	150	129	46.24%
Deutsche Börse	819	660	159	19.41%	851	617	234	27.50%	1,622	678	235	25.74%
Euronext	1,333	999	334	25.06%								
Helsinki	137	134	3	2.19%	150	147	3	2.00%	73	73	0	
Italian Exchange	278	269	9	3.24%	270	264	6	2.22%	254	250	4	1.57%
JSE South Africa	389	368	21	5.40%	668	644	24	3.59%	638	612	26	4.08%
Lisbon					125	125	0		169	169	0	
London	2,837	2,486	351	12.37%	2,274	1,826	448	19.70%	2,502	1,971	531	21.22%
Paris					1,144	968	176	15.38%	904	710	194	21.46%
Spanish Exchanges	3,015	2,986	29	0.96%	727	718	9	1.24%	366	362	4	1.09%
Stockholm	276	256	20	7.25%	300	277	23	7.67%	223	212	11	4.93%
Swiss Exchange	409	282	127	31.05%	412	239	173	41.99%	449	216	233	51.89%
Asia-Pacific												
Australian	1,583	1,515	68	4.30%	1,287	1,217	70	5.44%	1,178	1,129	49	4.16%
Hong Kong	1,096	1,086	10	0.91%	708	695	13	1.84%	542	518	24	4.43%
Kuala Lumpur	959	955	4	0.42%	752	749	3	0.40%	526	523	3	0.57%
New Zealand	200	158	42	21.00%	172	114	58	33.72%	175	135	40	22.86%
Philippine	235	233	2	0.85%	226	225	1	0.44%	205	205	0	
Singapore	633	608	25	3.95%	399	354	45	11.28%	272	250	22	8.09%
Taiwan	702	697	5	0.71%	462	462	0		347	347	0	
Tokyo	2,306	2,276	30	1.30%	1,935	1,892	43	2.22%	1,791	1,714	77	4.30%
Foreign Listings (All 60 Exchanges)			**2,632**				**2,829**				**3,608**	
Foreign Listings (All 60 Exchanges)				**9.19%**				**12.90%**				**14.60%**

Source: Fédération Internationales des Bourses de Valuers (World Federation of Stock Exchanges), http://www.fibv.com/WFE/.

Table 2 - Total Value of Trading in Domestic and Foreign Companies Listed on Major Stock Exchanges (In US$ millions converted from local currency values at month-end exchange rates)

Exchange	2004 Total	2004 Domestic Cies	2004 Foreign Cies	2004 Foreign %	1999 Total	1999 Domestic Cies	1999 Foreign Cies	1999 Foreign %	1995 Total	1995 Domestic Cies	1995 Foreign Cies	1995 Foreign %
Americas												
Mexico	45,389	43,651	1,328	2.95%	35,172	34,715			35,037	34,192		
Nasdaq	8,767,121	7,984,791	617,773	7.18%	10,467,369	10,114,054	349,145	3.34%	2,398,213	2,316,860	81,353	3.39%
NYSE	11,618,151	10,527,681	976,385	8.49%	8,945,205	8,223,849	686,637	7.71%	3,082,916	2,789,054	260,643	8.55%
Toronto	651,059	650,299	744	0.11%	357,443	356,598	845	0.24%	151,559	151,131	428	0.28%
Buenos Aires	4,832	4,593	238	4.94%	11,875	11,865			31,933	31,904		
Santiago	12,123	11,941			6,859	6,859			11,412	11,086		
Sao Paulo	103,990	103,936	52	0.05%	83,772	83,772			69,031	69,031		
Europe, Africa, Middle East												
Amsterdam					471,226	442,224	2,908	0.65%	125,684	115,796	193	0.17%
Brussels					221,365	203,819	17,546	7.93%	18,343	15,196	3,077	16.84%
Deutsche Borse	1,541,123	1,404,122	137,001	8.89%	1,551,467	1,375,877	175,590	11.32%	593,936	580,135	13,802	2.32%
Euronext	2,472,132	2,424,570	47,562	1.92%	4,387,146	4,274,664	112,482	2.56%				
Helsinki	223,687	219,540	4,147	1.85%	109,902	109,881	21	0.02%	19,207	19,207		
Italian Exchange	969,234	874,462	94,532	9.76%	539,449	535,981	3,468	0.64%	87,118	87,085	32	0.04%
JSE South Africa	161,073	112,288	45,451	28.81%	86,838	73,270	13,332	15.40%	17,425	15,948	1,234	7.18%
Lisbon					40,479	40,351			4,241	4,212		
London	5,169,024	2,940,092	2,228,931	52.80%	3,399,381	1,425,809	1,952,033	57.79%	1,153,221	512,323	626,863	55.03%
Paris					2,892,301	2,814,494	77,808	2.69%	929,669	915,494	3,616	0.39%
Spanish Exchanges	1,203,360	1,195,267	8,093	0.67%	738,726	736,810	1,916	0.26%	216,841	216,827	14	0.01%
Stockholm	462,501	412,219	50,283	10.87%	313,678	239,709	73,969	23.58%	94,210	93,223	987	1.05%
Swiss Exchange	791,371	51,089	737,999	93.53%	561,894	533,168	27,606	4.92%	340,114	319,117	17,601	5.23%
Asia-Pacific												
Australian	523,668	513,454	10,214	1.95%	198,195	196,228	1,967	0.99%	98,310	97,544	766	0.78%
Hong Kong	439,464	438,890	449	0.10%	230,032	227,993	437	0.19%	95,832	95,589	243	0.25%
Kuala Lumpur	61,636	60,479	1,135	1.84%	42,431	42,056	343	0.81%	60,792	60,192	523	0.86%
New Zealand	17,034	15,412	1,473	8.72%	13,687	12,150	1,324	9.82%	8,719	8,453	194	2.25%
Philippine	3,681	3,666	15	0.40%	19,950	19,820	130	0.65%	14,667	14,667		
Taiwan	107,247	718,461			107,407	107,407			63,983	63,983		
Taiwan	718,804	718,461	297	0.04%	913,610	910,184	2,194	0.24%	389,273	383,506		
Tokyo	3,218,113	3,188,355	612	0.02%	1,675,641	1,674,611	737	0.04%	884,000	882,961	1,039	0.12%
Foreign Percent (All 60 Exchanges)				**5.80%**				**3.43%**				**2.42%**

Source: Fédération Internationales des Bourses de Valuers (World Federation of Stock Exchanges), http://www.fibv.com/WFE/.